NOVEMBER, 1953

Products finishing

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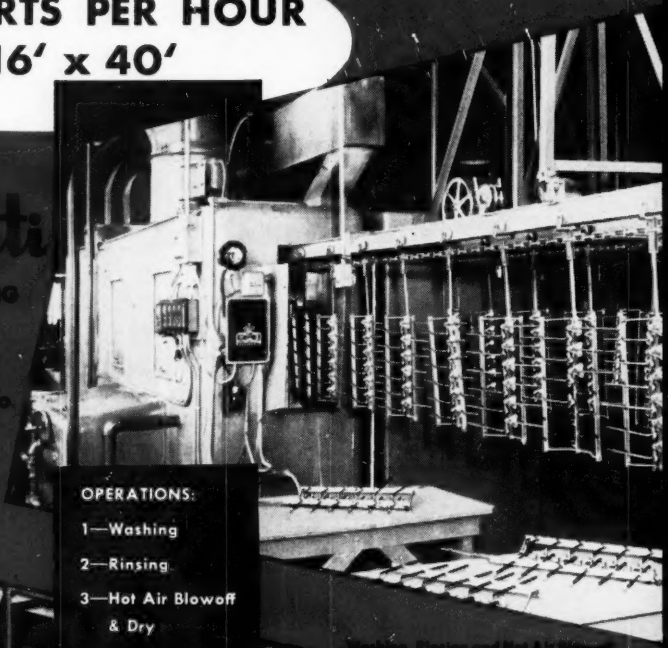
1000 PARTS PER HOUR in Space 16′ x 40′

ENGINEERED BY

Cincinnati

CLEANING AND FINISHING MACHINERY CO.

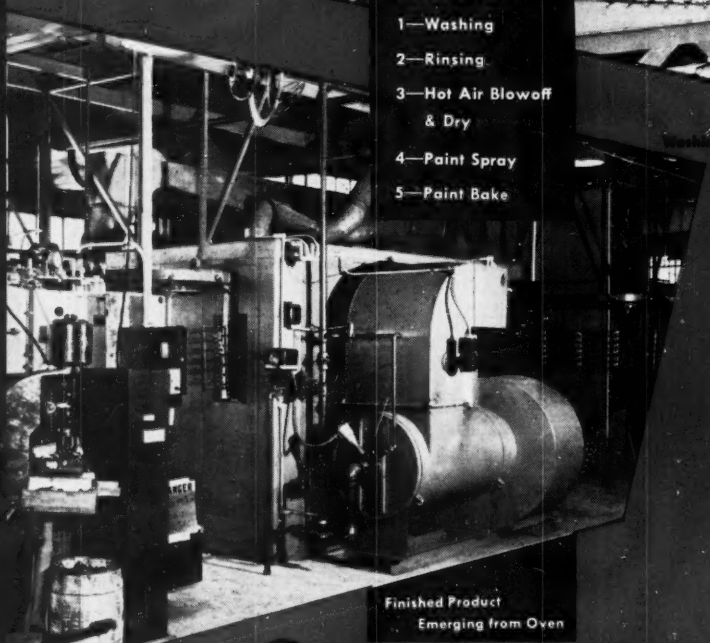
at The George R. Carter Co.
Detroit, Mich.



Washing, Rinsing and Hot Air Blowoff

OPERATIONS:

1—Washing
2—Rinsing
3—Hot Air Blowoff & Dry
4—Paint Spray
5—Paint Bake



Finished Product Emerging from Oven

Unusually compact, this CINCINNATI-engineered small parts finishing system has proved to be a major improvement in The George R. Carter Company's production facilities. Complete finishing operations on automobile trim hardware parts are performed efficiently and quickly.

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¶ What's the best way to strip paint from metal parts too large to be soaked in tanks? *See page 3.*

¶ What is the cheapest way to strip metal parts in large volume? *See page 9.*

¶ What strippers are best for removing oil-base paints?...Synthetic enamels, alkali-resistant plastics or resin-base paints?... Japans, wrinkle finishes, nitrocellulose lacquers, alkyds, phenolics and ureas? *See page 12.*

FREE For a copy of "How to STRIP PAINT" just send us the coupon.

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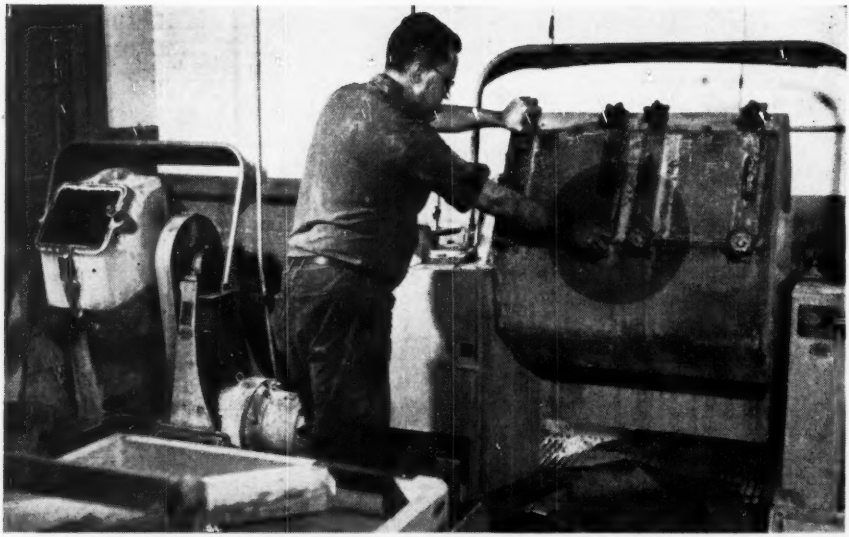

ONE OF A NUMBER of different tumbling barrels in which sample parts are processed in the new Norton barrel-finishing department.

Get the

"TOUCH OF GOLD"

Sample tumbling FREE in the new Norton test department

Can you "tumble" with the "Touch of Gold"? Can you be sure that you are adding value to your product each time the barrel turns in the barrel-finishing operation? Have you investigated this method as a way to more efficient processing and higher profit?

You can get samples processed without cost — in the newly enlarged Norton sample processing department with tumbling barrels of different types and capacities, plus auxiliary equipment such as a mechanically vibrated screen. Here Norton engineers, long experienced in tumbling procedures, determine for you just what barrel-finishing can do for the metal parts you send.

The range is wide. We have been successful in finishing parts ranging from tiny needles to castings and forgings weighing several pounds. Many manufacturers already have the "Touch of Gold" with substantial savings and production speed-up.

Tests result in detailed recommendations on barrel type, size, speed and amount of ALUNDUM* Tumbling Abrasive, amount of water, type and amount of compound or cleaner, time cycles and other data.

No obligation — send now. Mail us your representative sample parts plus (a) finished sample to be matched and (b) information on your present barrel-finishing equipment, if any, including type, size and speed of barrel. Send to NORTON COMPANY, Worcester 6, Mass., attention Sales Engineering Dept., Abrasive Division. Tests take about a week.

Also available is a 55-page Norton handbook on barrel-finishing. Ask your Norton Distributor for Form 501 or write us direct.

*Trade-Mark Reg. U. S. Pat. Off.

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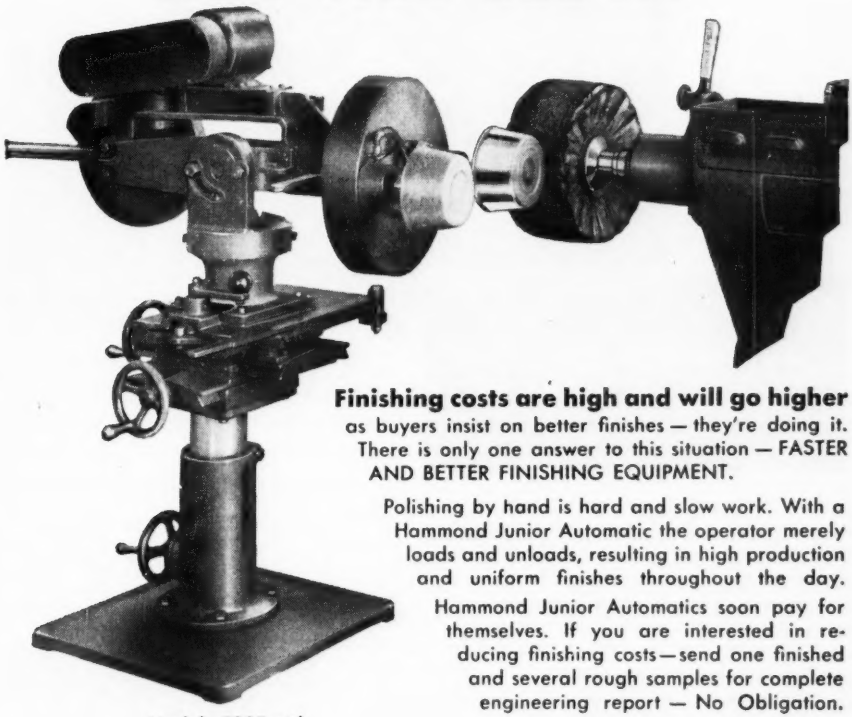

Model E2SF with Hammond Polishing Lathe

Finishing costs are high and will go higher as buyers insist on better finishes — they're doing it. There is only one answer to this situation — FASTER AND BETTER FINISHING EQUIPMENT.

Polishing by hand is hard and slow work. With a Hammond Junior Automatic the operator merely loads and unloads, resulting in high production and uniform finishes throughout the day.

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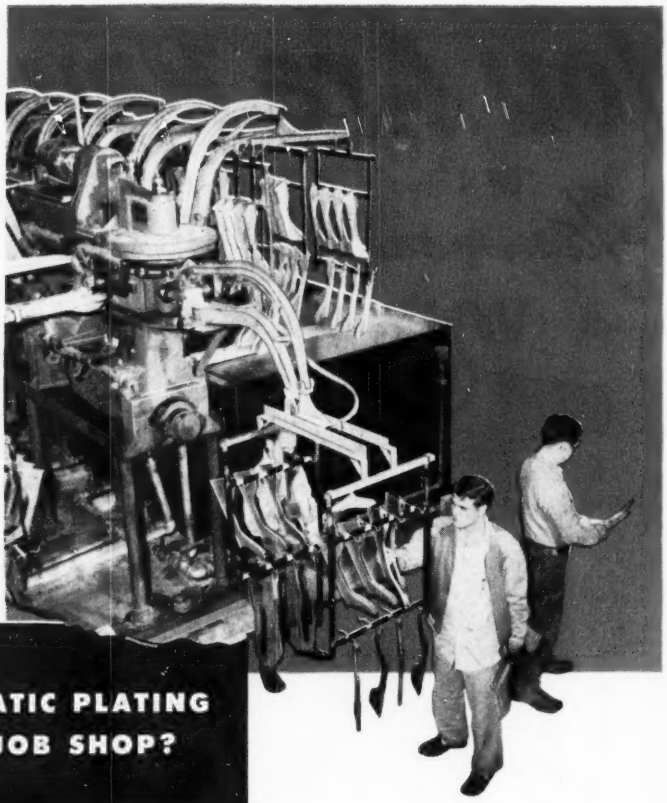

AUTOMATIC PLATING IN A JOB SHOP?

That's what Mr. Louis S. Morse, Jr., president of Detroit Plating Industries, says about Stevens machines used in his modern plating shop.

Detroit Plating Industries has four Stevens machines in operation. Three are full automatic rack type, and one is a Stevens Automatic Barrel machine. With this equipment, Detroit Plating Industries get precise control of plate thickness – they handle a diversified group of products – and they can quickly shift from one order to the next.

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Typical applications include builders' hardware, vanity and cosmetic cases, lipstick shells and pen caps.

Where decorative color effects are desired on metal, DURACHEM can be supplied in a range of colors with the same chemical stability as the clear finish.

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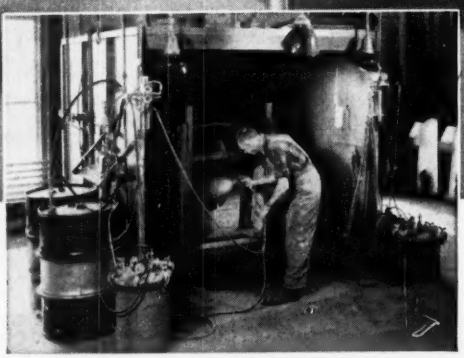
How DeVilbiss helps over 1,000

One of the five spray operations where Caswell-Runyan sprayer uses DeVilbiss gun to apply rich, gleaming lacquer finish to TV cabinet.



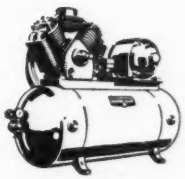
Since several lacquers are used at the same time on different cabinets, each spray booth is equipped with a full spray outfit for each finishing material.

Caswell-Runyan finish cabinets every day

Caswell-Runyan holds an enviable position in the woodworking industry. The Huntington, Ind., firm – first in the world to mass produce cedar chests – now concentrates on producing quality wood cabinets for leading makers of nationally advertised radio and TV sets.

According to A. J. Glass, Works Manager, getting the finest possible finish on their cabinets is just about their most important concern. "To create highly uniform, quality finishes and still maintain our 1000 a day production schedule is a severe test for spray equipment," says Mr. Glass. "But, we've used DeVilbiss products, exclusively, for 29 years and find they meet our most critical needs for fine finishes, rapidly applied and with little equipment maintenance. DeVilbiss service has also been helpful and prompt."

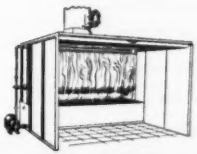
A DeVilbiss spray system or automatic painting machine may be just what *you* need to get smooth, uniform coatings with great savings in time, material and labor. Ask your local DeVilbiss supplier, our nearest branch office, or write us direct.



Air Compressors

Hose and Connections

Spray Guns



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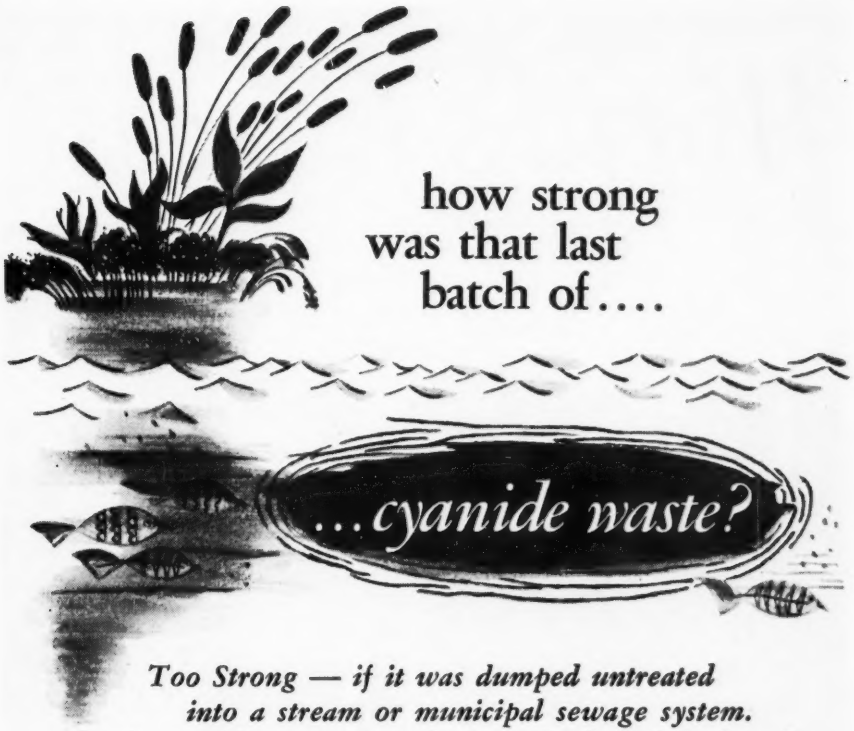

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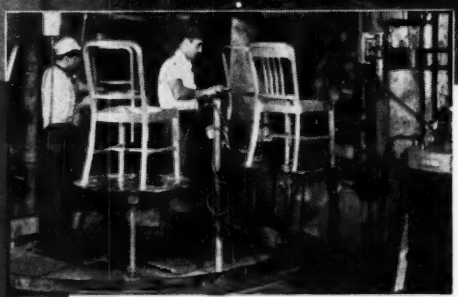

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Maker
Of Metal Office Furniture
Uses Pittsburgh Enamels

Tough, long-lasting finishes add beauty and durability to modern, streamlined equipment made by General Fireproofing Company

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By working with GF's technical and engineering staff, Pittsburgh has produced high quality enamels to meet General Fireproofing's finishing requirements. These coatings provide exceptional adhesion, toughness, and durability. Because they are so easy to apply, they speed up production and save manufacturing costs.

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Minnesota Mining & Mfg. Co., Dept. . . . . St. Paul 6, Minn.

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New WAGNER Titeflex Filters end your filtering headaches

The outstanding simplicity and efficiency of Titeflex Filters are now backed up by the manufacturing facilities and electroplating experience of Wagner Brothers, Inc. Our acquisition of this leader in the filtering field means you now have Titeflex' faster cleaning, high flow rate and low operating cost *plus* the on-the-spot service of the Wagner Brothers organization in principal industrial areas.

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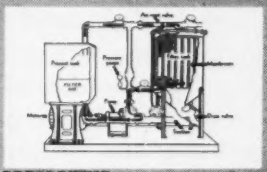
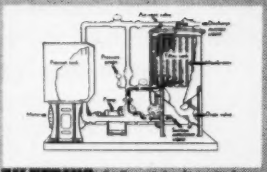
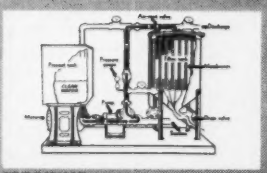
The complete standard line of Wagner-Titeflex Filters offers capacities from 1000 G.P.H. up, filter areas from 3 to 70 sq. ft.; special equipment designed and built to suit your requirements. Mail coupon on your letterhead for detailed information and filtering questionnaire. If you're a plating equipment distributor, ask about territories open.



PRECOATING: Cake of low-cost filter-aid is built up in minutes on exterior of cylinder membranes.



FILTERING: Sediment is deposited on layer of filter-aid, clear solution discharged from upper end of membranes.



CLEANING: Cake is smashed off by back-washing, broken up by built-in spray and drained off. No manual removal of residue.

Titeflex

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DETROIT 3, MICHIGAN

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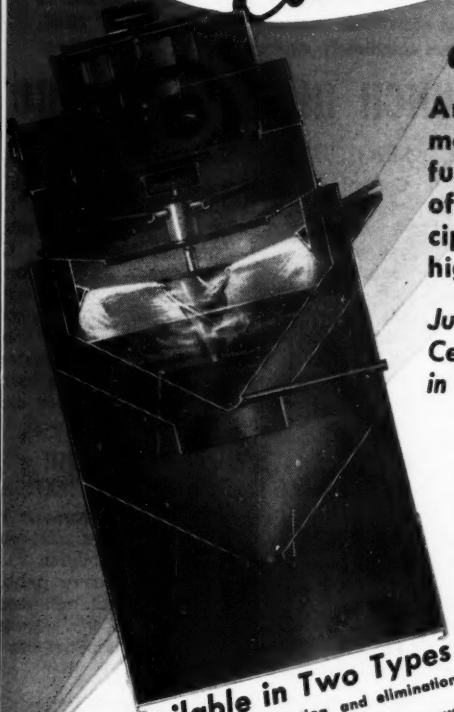

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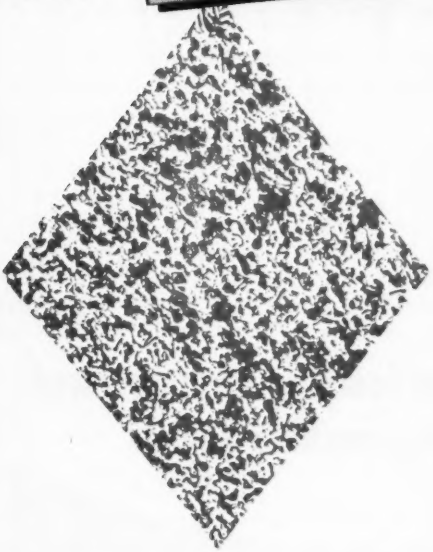

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Pf editorial

NOVEMBER, 1953

Vol. 18, No. 2

Analyze Your Shop Operations

It seems almost elementary that finishing shop managers should take advantage of all available and suitable control systems to aid them in keeping their shops running smoothly and efficiently. However sometimes a manager becomes so involved in day-to-day operating details that he neglects the equally important matter of overall planning for profitable operation.

Not too many years ago plating solution analysis was a difficult and rarely performed task. Today, platers have learned that daily or weekly chemical analysis of plating solutions, and plating tests in some cases, are "musts" for efficient operation. Likewise, solutions employed in phosphatizing or other metal treatment processes are controlled as to chemical makeup and operated within predetermined limits of temperature and other variables, usually with the aid of automatic controls.

A further method of analyzing daily production conditions involving the use of Statistical Quality Control procedures is discussed in the article beginning on page 24 of this issue. This system carries routine chemical analysis, process control, and product inspection procedures one step farther in coordinating the data thus provided into a scientific method of control of product quality.

Other, perhaps simpler, ways of evaluating and improving the operation of a finishing shop consist of a periodic examination of production processes, shop equipment, and costs as they are related to the work going through the shop. Job plating and paint finishing shops, particularly, are constantly faced with the problem of being both flexible enough to handle a variety of types and sizes of parts for customers, and at the same time capable of processing such parts economically. Many shops have found that the best answer to that problem is to specialize on one, two, or three classes of products, installing necessary equipment and providing proper shop layout to handle the work.

While this may seem to be simple and common-sense planning, many times it requires that the shop manager periodically take an objective survey of his operation—removing himself temporarily from the forest of daily production so that he can see the trees representing significant problems which must be solved, and indicating directions which overall planning must take to insure continued successful, profitable operation.

Ezra A. Blount

—EDITOR

Statistical Quality Control at Detroit's Ternstedt Division

By BRYANT W. POCOCK, M.A.
Registered Professional Engineer

PF FEATURE

General Motors' Ternstedt Division plant in Detroit is one of the world's largest producers of automobile hardware. Consequently, a great deal of metal finishing is done at Ternstedt. Because of the large number of pieces produced daily, and the heterogeneous assortment of shapes, sizes and finishes on these parts, the matter of inspection and quality control has assumed major importance.

About the middle of 1950, Ternstedt officials decided that statistical methods of quality control would have to be introduced. This was a natural, albeit farsighted decision, because the volume of business at Ternstedt had grown to the extent that any other methods would be wasteful and inefficient by comparison. Accordingly, SQC was adopted and put into practice.

This was done slowly and carefully at first and with considerable planning. A well-directed program of education was carried out, and is still being carried out to this day. The Department of Quality Control was charged with the responsibility of guiding all company efforts toward a common goal: the manufacture of parts having uniform high quality of known standard of excellence. The fact that excellence of quality becomes known, and can be guaranteed—even predicted—is the key to success of the enterprise.

Far from costing a great deal more, Ternstedt officials have discovered that SQC has saved money. R. C. Smith, Ternstedt's Administrator of Central Quality Control, likes to cite the following example as one of many specific applications wherein SQC has solved problems and reduced costs.

Ternstedt copper plates all glass channels. These channels support the glass in automobile CV assemblies. Copper plating is followed by a copper coloring operation to produce high luster. The coloring installation consists

of 9 booths with two buffing wheels in each booth, a total of 18 processes. The two wheels in each booth are operated by one operator. This employee loads two channels on a single fixture and pushes the fixture under the buffing wheel, where it revolves automatically. While the first two channels are being buffed, the operator unloads the other fixture, loads it, and pushes it under its respective buffing wheel.

A chain type conveyor is used in this department, carrying racks which will hold 26 pieces each. The former sequence was to hang the parts on one of the racks passing by the booth as soon as they were removed from the fixture. This meant that 9 operators with 18 processes were placing work

Fig. 1—The quality control charts posted at this inspection station record defects in chromium plated parts, and defects noted on copper color inspection.

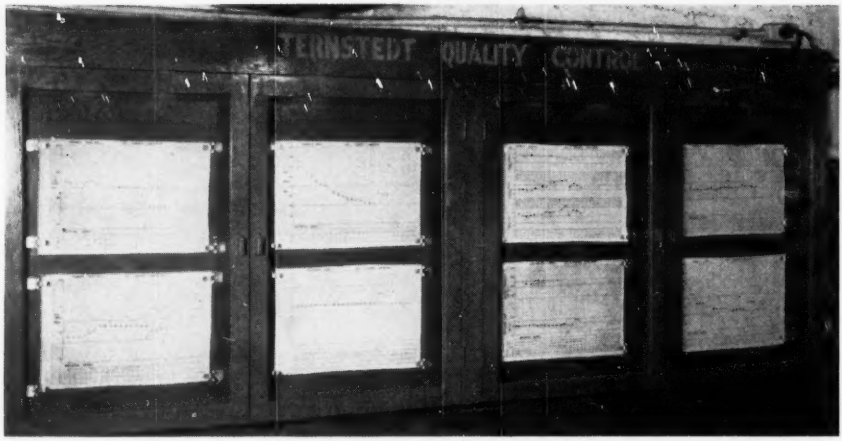

Fig. 2—Control charts posted in a plating department record cleaner and acid bath concentrations, pertinent data for cyanide copper strike and acid copper solutions, and plated metal thickness measurements.

on any rack passing by the booths. At the end of the conveyor were four inspectors, inspecting the channels 100 per cent, separating good channels from those which were poor for copper color or cut-throughs. When a percentage chart was first put on this hundred per cent inspection it was found that 27 per cent defectives were being sorted out by the four inspectors, with no way of determining which of the 9 operators, or which of the 18 processes were concerned in producing the 27 per cent defective. Therefore, the following action was taken.

A shelf was established on each side of each booth, on which the operator placed the rack after removing it from the conveyor. The operator then filled the racks with glass channels from each of his two processes, thus making it possible to identify the operator and which of his two processes the work represented. An inspector inspected 6 pieces from a rack of 26 each. If these samples were acceptable, the rack was accepted and identified as OK material; otherwise the rack was held for hundred per cent inspection.

Result: this department now operates with a total average of 7 per cent defective for poor color or cut-through. It is possible to identify and to take quick action on a process or operator making salvage. The hundred per cent inspection has since been eliminated entirely, with inspection by sampling only.

Ternstedt officials feel that statistics in automobile manufacture is here to stay. Why? Because it brings out the facts concerning what a process is capable of doing, and of how well a given process is working out. Mr. Smith expresses it this way: "If a process isn't capable of reducing defects down to one or two or three per cent, which is naturally what everybody wants (they don't want any defects at all, if they can get

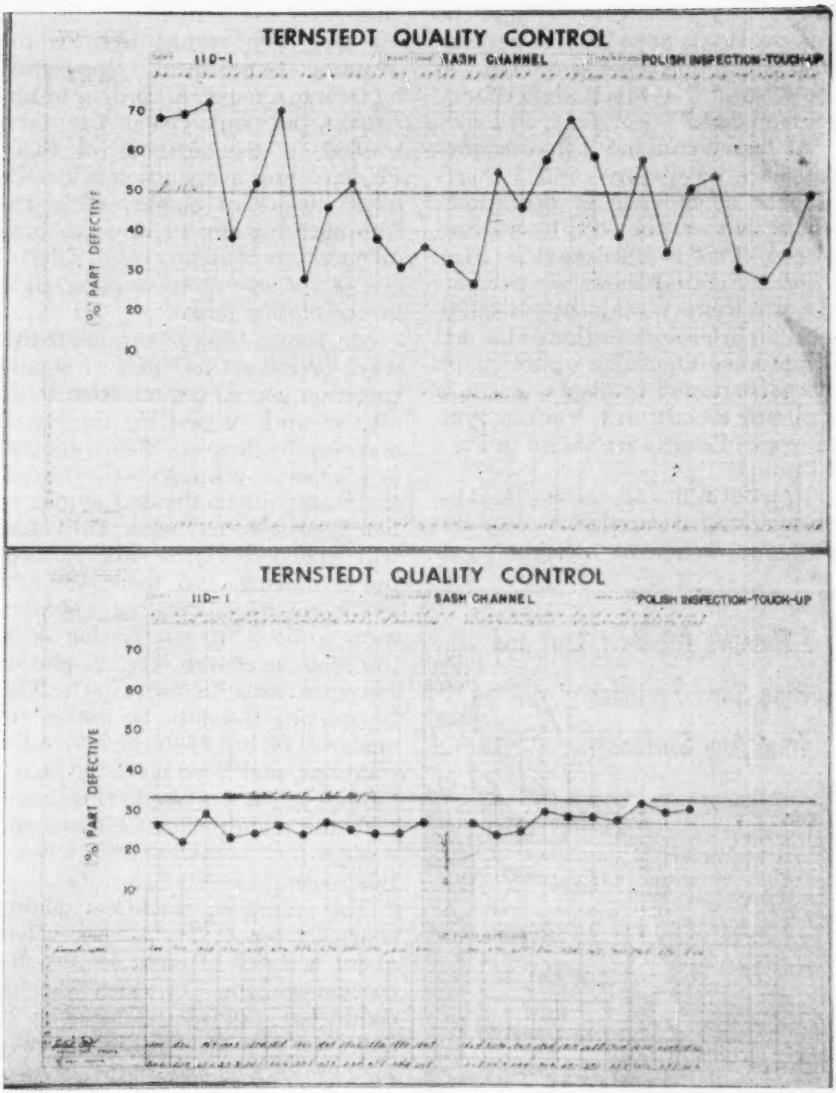

Fig. 3—Inspection of polished sash channels before copper plating, prior to chart control (top chart), indicated a high percentage of touchups—average 48%. This figure was reduced to 26.9% and kept more uniform (lower chart) by changes in polishing methods and improved handling procedures.

there), then you have to be satisfied with what you can get or change the process. If you have 10 or 12 per cent defects and don't feel as though you could stand that much, then change your process."

At Ternstedt it is felt that the proper place for quality control charts is right at the site of operations, where they can be seen by all concerned. This is illustrated in Figs. 1 and 2. Figure 1 shows two percentage or p charts prominently displayed at an inspection station at the end of a process. Figure 2 is a photograph of charts posted in display cases in a plating department. Various typical control charts are shown in Figs. 3 through 6.

Responsibility for the eventual indoctrination of practically every employee at Ternstedt with the significance and importance of statistical quality control in relation to his own job has been turned over to the Training Department, represented by George Crooks. According to Mr. Crooks, all supervision has been trained in the methods of SQC. Plans are now in operation to include other classes of employees in the training program, in time reaching all operators of all processes. This includes the operators working right on the plating tanks.

Mr. Smith likes to express it this way: "We don't feel that we should require a special organization to do all the work of plotting the charts and keeping them up. We expect that as soon as we get everybody trained, the work will be divided among so many people that each individual will expend very little effort in keeping it moving, and there won't be any necessity of creating a department to do it. In our plating setup the man in charge of each plating conveyor plots his own charts. This is equitable because he makes the analyses of his cleaners and other solutions, and if he plots the charts himself this keeps him in close touch with the situation at all times and enables him to take appropriate action when necessary."

The course in statistical quality control given at Ternstedt revolves about a series of eight lecture-discussion sessions. These meetings are conducted, not by a specialist in SQC, but by a specialist in the training of men, who has studied SQC to the point where he knows everything he needs to know about it in order to conduct the course. He is primarily an educator, versed in the techniques

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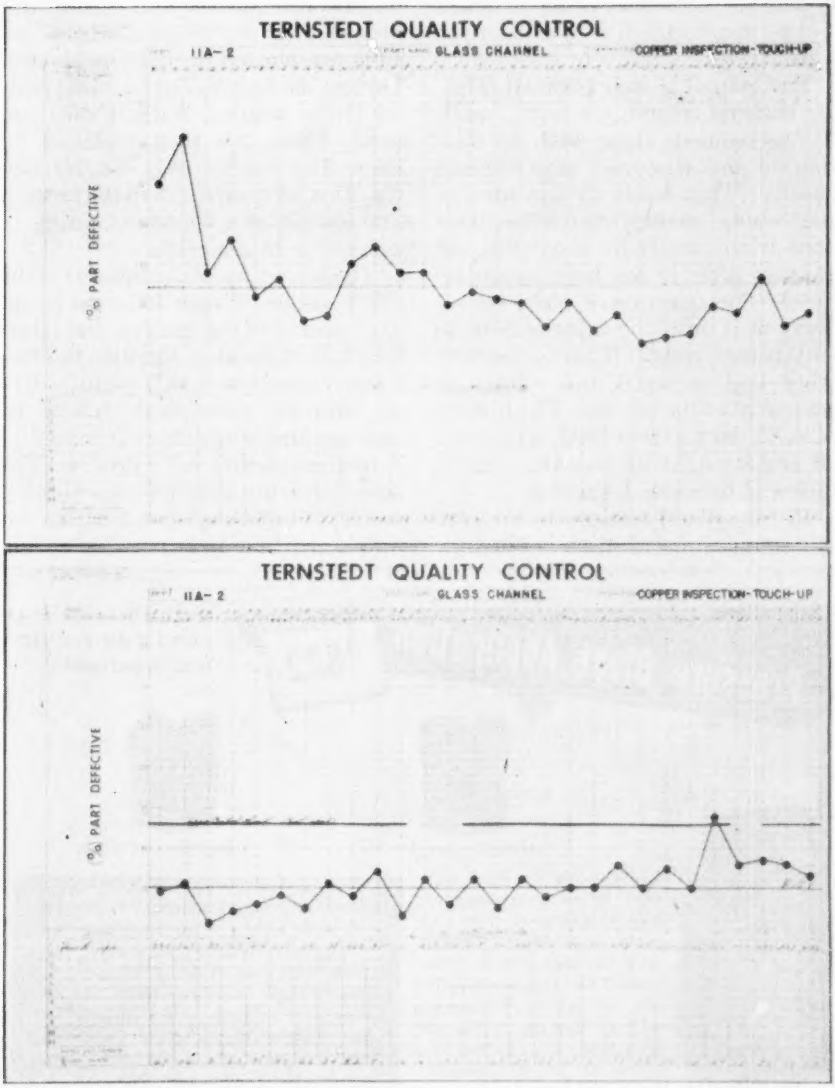

Fig. 4—A comparison of results of inspection of copper plated and buffed glass channels prior to and after the installation of statistical quality control procedures shows that average fraction defective was reduced from 12.2% to 5.1%.

of putting ideas across. It is his job to win the confidence of his listeners and to inspire them with a desire to learn.

The course is well planned. During the first session the word "quality" is defined, along with its relation to the customer who expects quality. This leads to the idea of controlling quality, which has been done traditionally by inspecting the product after it has been manufactured. The question is then raised, "why wait until the thing is done to see if it is all right?" This wastes both labor and material and allows no control over the process. The history of SQC, dating from 1923, is presented and brought up to date. This is followed by class discussion.

In the second session the concept of frequency distribution is illustrated by throwing dice. The men throw the dice themselves and records are kept of how the dice fall. These results are plotted on the blackboard. During the first half of the class period three regular, normal dice are used. These are then replaced by three dice having only 4's, 5's and 6's. This, of course, alters the pattern and simulates a change occuring in process or in material.

The histogram is introduced in the third session. This is followed by an explanation of the average and range chart. It is pointed out that the histogram presents a still picture, like an ordinary photograph, where the average and range chart is in reality a motion picture of a process. The latter presents a continuous running record of a plating operation, for example, so that it is possible to tell

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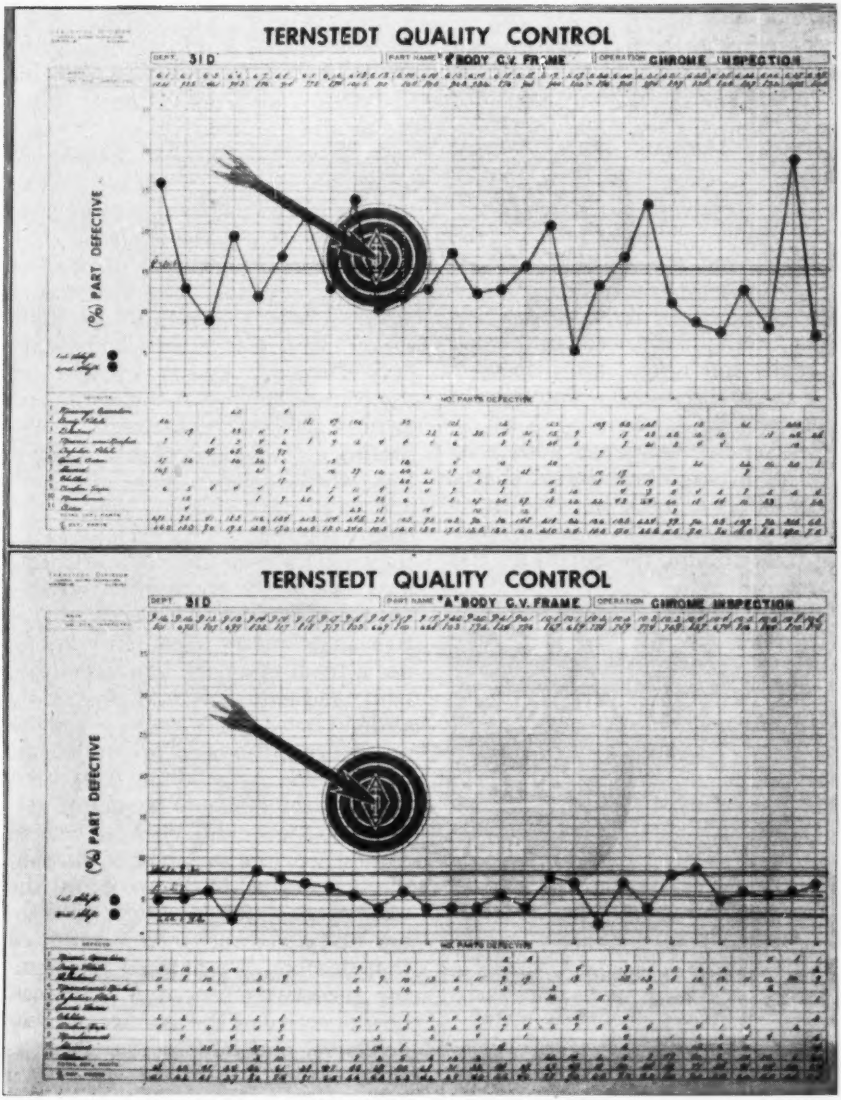

Fig. 5—A comparison of p-charts for chrome inspection of C. V. frames. The average fraction defective was lowered from 15.6 before SQC (top chart) to 5.7 (lower chart) by closer control of the plating process and an improvement in the pre-chrome inspection procedure.

how it is progressing hour by hour, at 15-minute intervals, at shift intervals, or at whatever intervals are considered desirable.

The discussion is continued during the fourth session, with an average and range chart constructed from plant data. The entire fourth meeting is confined to a study of this type of chart. The purpose of control limits and the methods of establishing them are carefully explained. The relationships which exist between individual pieces and their averages and ranges are discussed, with group discussion occupying the balance of the session.

Session five is opened with a review of average and range charts. Every effort is made to avoid introducing mathematics wherever possible, thus running the calculated risk of boring a few mathematically-minded individuals rather than taking any chance of misunderstanding on the part of the majority. Session five usually does not get beyond the X-bar and R chart.

In session six, the control chart for number defective is discussed for the first time. This is the chart for attributes—the p, pn and C charts. One peculiarity of the Ternstedt chart is that data covering corrective action are recorded right on the chart. This makes Ternstedt charts unique, so only Ternstedt charts are used in the course. Only such data are used as are collected in the plant, representing actual shop cases. It follows that when the men leave the class and go to their jobs and look at the charts posted in the department, they will see the same kinds of charts they saw in the conference room.

In order to plot a number defective chart in the conference room, use is made of a bead box containing white and red beads, and of a paddle with 50 holes. Mr. Crooks states the procedure as follows: "We pulled out those beads at random, with each bead having an equal chance of getting into the paddle. We stirred them carefully before each pull of the paddle. All we had to do was count the red beads, which gave us the number defective, and then we plotted that number. We finished the number defective chart and explained how to arrive at the average number defective, and how to establish the control limit. Here we went to a nomograph for the control limit, thus making it a lot easier to get across by avoiding the formula, which involves a square root."

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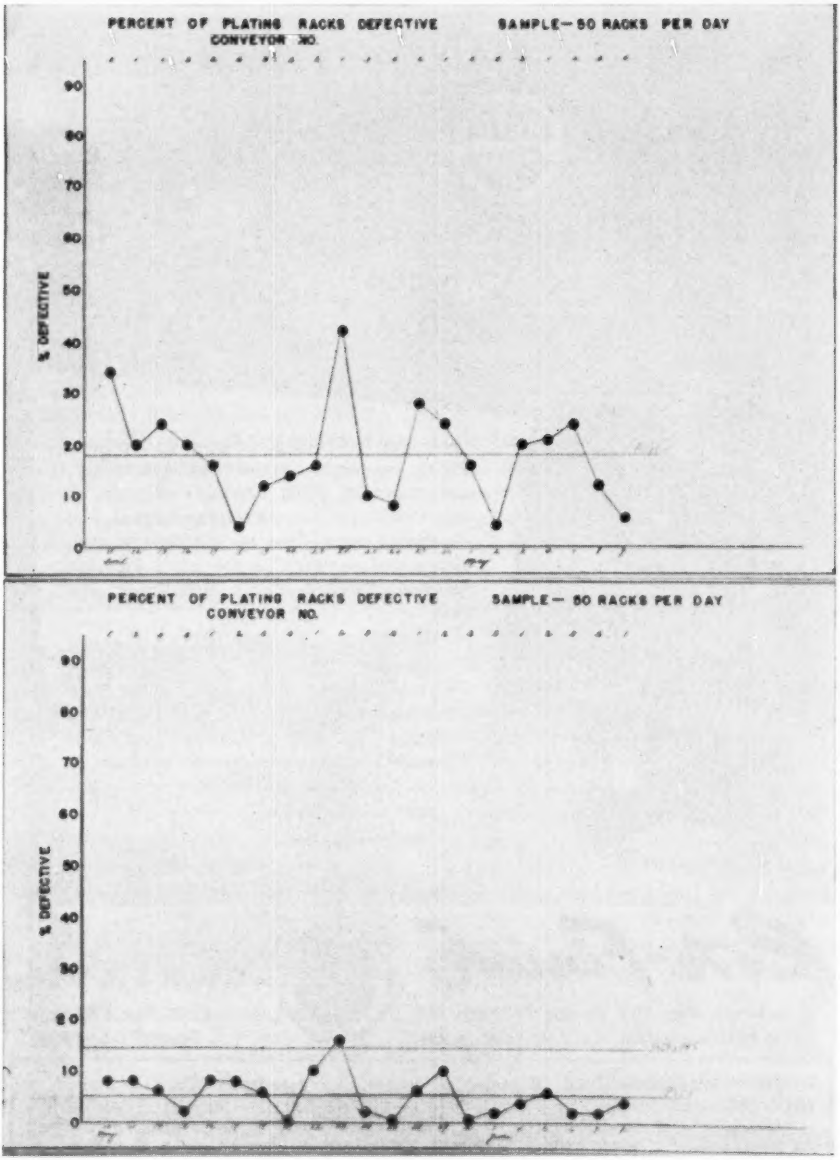
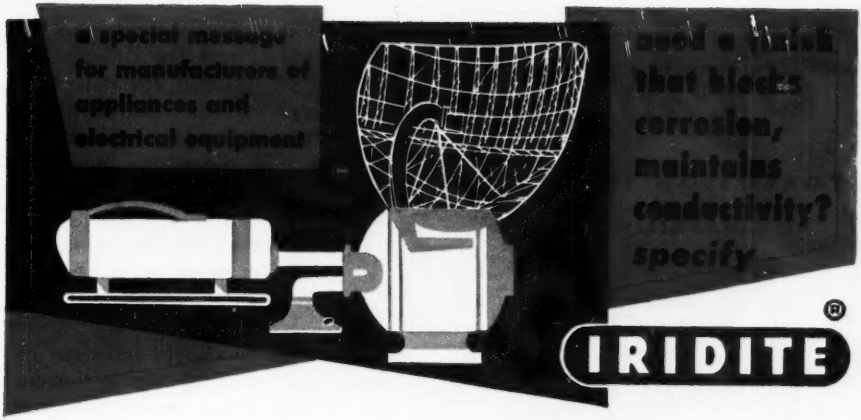


Fig. 6—Plating racks that do not make proper contact produce only rejected work. When quality control was introduced, it was noted that defective racks amounted to 18% of the total number put through the process. A daily, systematic sampling inspection of bad racks, and simultaneous correction of conditions causing the trouble, reduced the average fraction defective to 5.3%.
(Illustrations courtesy Ternstedt Div., General Motors Corp., Detroit, Mich.)



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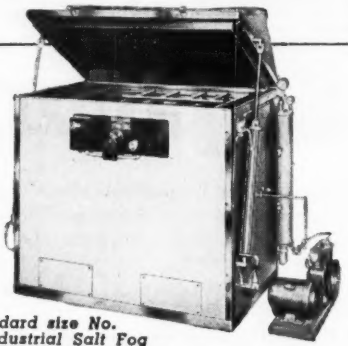

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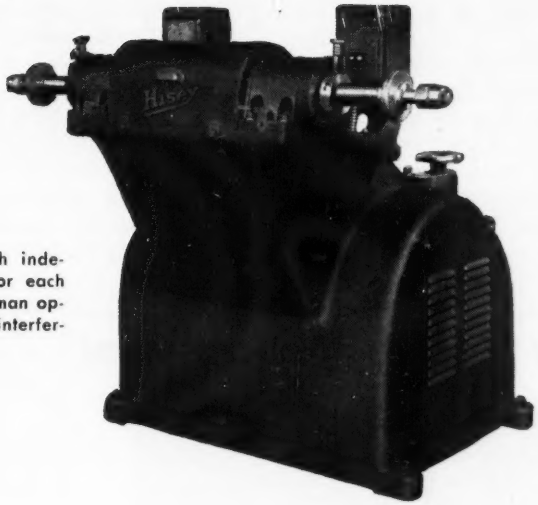
In session seven the charts for per cent defective and for defects are presented. The chart for defects is the C chart, which deals with the number of defects being produced. One defective piece, for example, may have one or more defects. It may have several. Ternstedt uses its own p chart for per cent of defective parts and a pn chart for number of defective parts in a sample. It is pointed out to the class that these three attributes charts indicate inspection for acceptability or non-acceptability without regard to measured variation. They mean that one is dealing with appearance, finish, scratches, and so on. One either takes the part or he doesn't take it. Session eight consists of a summary and review of the entire course.

Mr. Crooks has this to say about his course: "We've had group participation, in that employees have learned by doing. We have used many visual aids. We have used more charts and visual material than we have ever used before in any course. We have used every training method in the book. We have used the conference method, we have used the problem-solving method; at times, we have used the straight lecture method.

"I would recommend a training course in SQC in any large plant engaged in similar production, remembering that the course has to be adapted to the plant. No plant should attempt to conduct such a course, however, until a statistical quality control group has become well established. The average large plant should have at least six months' experience with SQC before



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HISEY Buffing and Polishing Machines are made from small bench sizes up to 30 H.P., in a variety of types to meet all requirements.

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Division of The Cincinnati Electrical Tool Co.

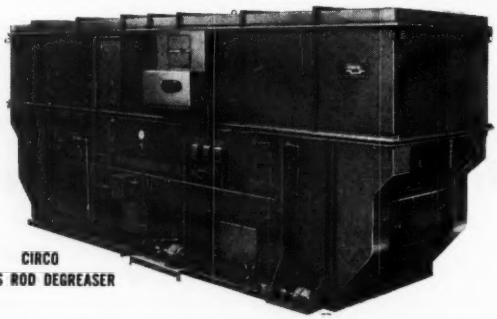
undertaking training in a concentrated way."

Ternstedt officials maintain that a certain amount of experience is desirable in order that the information to be presented in course form will be information with which the employees may already be on practical speaking terms. It is felt that the whole subject, while familiar enough to graduates of engineering colleges, is new to the layman.

There is a certain normal resistance to anything new, particularly on the part of the "old-timer" who may be well established in his ways. There is a normal resistance to anything with a high-sounding name like "statistical" hooked onto it. Consequently, at Ternstedt the word is rarely mentioned. Emphasis is upon "quality" and "control."

According to Ternstedt's Administrator of Quality, X-bar and R charts are used to express practically any important variable in work coming from the plating solutions. Mr. Smith states, "Regarding the finish, or any phase of it, we can establish averages, ranges, percentages or numbers of defects, or of defective pieces, but on the solutions themselves our laboratories have specified the quantities of materials required. Therefore we feel that what

Circo Vapor Degreasers use 30% less solvent



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Vapor Degreasers • Metal Parts Washers • Dryers • Solvent Recovery Stills

room with bath . . . $124.50 per day

Too much?
Recently a large appliance manufacturer found he'd been paying it for years—$124.50 per day for 10 spray booths! He found his dollars were being burned up by production shut-downs, extra time and money for maintenance, spoiled production, unreclaimable paint, and booth operating troubles. How much are these things costing you?

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we should do is make sure that the men in charge of our various conveyors maintain correct concentrations in terms of ounces per gallon, as specified by the laboratory.

"I would like to say this. Management in some plants has been just a little bit afraid of statistical quality control. They feel as though it's going to take a great big department of some kind to operate this thing. They consider that you're going to put up a lot of charts around your equipment, that you're going to make records of everything that occurs during the day. They're apt to be just a bit suspicious that you're trying to make a good job for yourself. At first, that type of management may not grasp the fact that corrections can be made the minute you begin advertising the things you're doing wrong. Actually, SQC is a tool of management.

"In our own plant here we've always had what we term a roving inspector. He goes up to an operation and he inspects it to see that it's being performed properly without any damage to the part, and that the finish or luster is being maintained. He's been doing those things for us for years. But never before have we had him make a record of how often he finds a job good, or how often bad. Now, with SQC we're just having him make a record so that we can see some sort of motion picture by hours or by numbers of pieces he looks at, over a given period of time. We're not actually adding any expense to this. We're just handing him a form to record his observations on. We make him post the form where

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It's a degreasing basket and a "tote-box" all in one!

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THE CHAS. WM. DOEPKE MANUFACTURING CO., INC.
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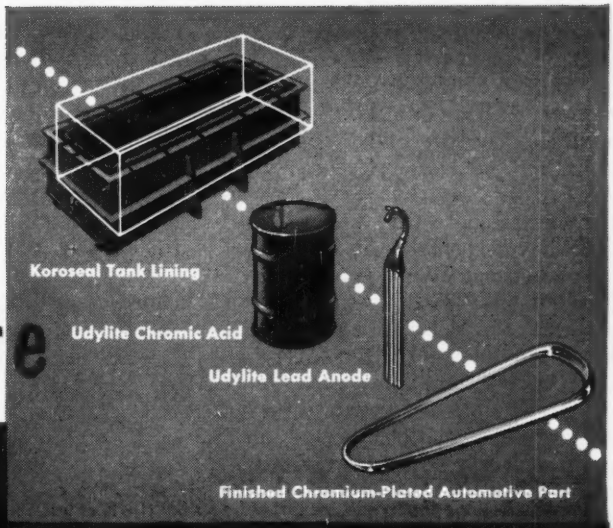

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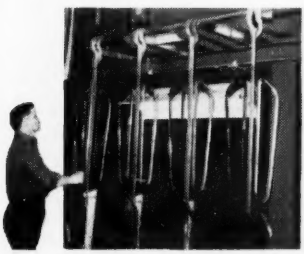
In chromium plating . . . supplies are as vital as the process! That's why it pays to get Udylite.

Koroseal Tank Linings resist nearly all acids—particularly chromic . . . and they will not contaminate solutions. They do not oxidize or plate up, and are unaffected by oil or grease.

Here's automotive parts at Gerity-Michigan Corporation on their way to a perfect finish—thanks to Udylite automatic plating equipment.



Udylite Lead Anodes are manufactured from newly-mined virgin metals, insuring longer anode life. Furnished in 8 shapes, with 7 types of hooks, to suit every need.

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Udylite Sulphuric Acid—66°—well stocked for prompt delivery.

For the finest in chromium supplies or any other material, equipment or processes you need, look to Udylite for availability and service.

THE UDYLITE CORPORATION, DETROIT 11, MICHIGAN. *West of Rockies: L. H. Butcher Company, Los Angeles, California.*

PIONEER OF A BETTER WAY IN PLATING

THE *Udylite* CORPORATION
DETROIT 11, MICHIGAN

everybody can see it, and that's all that's necessary.

"As far as the operator is concerned, we have found that, with the advancements we make in popularizing SQC, the operator himself becomes conscious that we are recording the things he's doing, and he begins to take pride in his work. He'll ask questions. When you explain to him that you are recording the amount of defective work that either he as the operator or the equipment that he's operating makes every hour or every day, he begins to think that perhaps he can do a better job in maintaining accurate conditions, close limits, and so on. It doesn't seem to make any difference whether it's polishing or buffing or plating, or what it is. A chart can be originated that will put the information where it will do the most good—where the other party can see it."

Ternstedt Division has reason to be proud of its applications of statistical quality control methods. It has even greater cause to take pride in the vision and foresight which influenced its officers to get in on the ground floor of statistical quality control applied to finishing operations.

Our Eyes And The Sense of Color

An eye for color is not as unusual or as rare as many may think. Artists are not the only ones who see and respond to colors. We all have eyes for colors.

The Color Research Laboratory of the Sun Chemical Corporation, New York, has found that the human eye can see about 1,000,000 colors! They are not visible in

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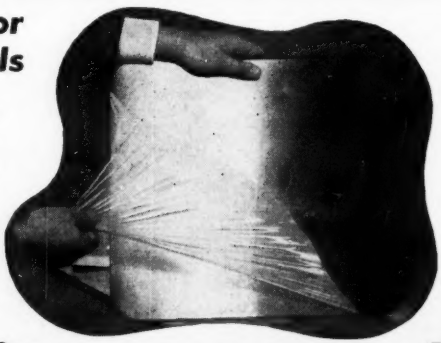
Striplastic is a protective plastic applied by spraying, dipping or rolling. It is used on stainless steels, high polished metal sheets, sheets in cold working or drawing, tools, dies and parts, and on sheets or metal parts before packaging. It protects against scratching and abrasion, and against rust. Also available as a booth coat protection.



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Among many advantages, it is nontoxic, possesses great tensile strength and is easily stripped off in one piece. Write for complete information on this new strippable plastic.

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CHECKER CAB MFG. CORP., KALAMAZOO, MICH.

Army cargo trailers are part of the production at Checker Cab Mfg. Corp. Jensen Pan-L-Heat ovens are baking on the olive drab finish.

In addition to taxicabs and buses, Checker produces 100 cargo trailers per eight-hour day. At the same time, 200 wheels and wheel rings are processed during the trailer operations. Wheels are placed between the trailer bodies, while rings go through the ovens between the chassis.

Jensen Pan-L-Heat Ovens are now being used for processing these trailers. R. E. Smith, Assistant to the President says, "We're sold on these electric Pan-L-Heat Ovens! For one thing, they're safer than any other type of oven I've seen. There's no danger of broken glass because there are no glass bulbs to break. Manpower has been cut down to a minimum. We're especially well pleased with the Automatic Temperature Control of the Jensen ovens. They switch on and off according to the temperature required."

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- Uniform, high quality production.
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Jensen SPECIALTIES, INC.

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the rainbow. But they can be reproduced and matched in the color laboratory.

The modern art of color application lies not in color numbers, but in scientifically selected and applied utilitarian colors. Colors must be tested, classified and their reactions and results in application noted and coded.

Color sense and application are largely a matter of individual, local or racial association and, of course, intellectual development which includes personality. Even the state of one's health may have something to do with color preferences or dislikes. The human eye is a marvelous and complex color camera which transfers its color impressions to the brain. It is known that not all animals or insects are able to see colors as humans see them. And color sense in humans now seems to be an integral part of our nature. Unquestionably the human eye, as it sees today, has been seeing colors in much the same fashion as it saw them before the Paleolithic Age. The Egyptians were highly sensitive to color as we are today.

But it is believed that color sense must have developed gradually within the span of modern civilization. Early languages, Sun researchers have found, had few names for colors. There is no Sanskrit root whose meaning has any reference to color. Certain colors, such as blue, were somewhat slow to emerge in human favor, although the Greeks used it in interiors and exteriors of buildings and in classic sculpture. The Egyptians favored blue. They sensed blue, no doubt, as a celestial color.

And so our eye and psychological sense for colors has a long pedigree developed out of the ages and environments of civilized Man.

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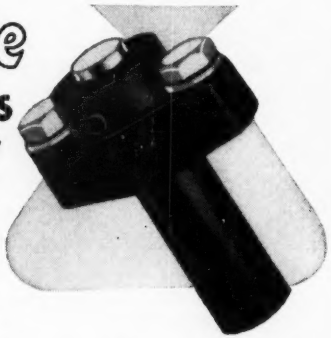

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Phosteel and Phospray for phosphatizing steel, iron or zinc.
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Dynakleen for bright cleaning all metals.
Kwikseal and Proctoil water displacing oils.

Or send us samples of parts and we will process them for your approval.

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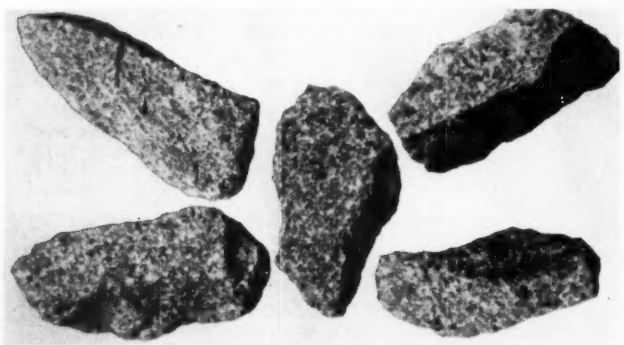
T-3

The Selection of a Mineral for Reducing Surface Area.

A question frequently asked of us is: "Have you been able to find any mineral or rock that would provide for a long use life and a minimum of screenings when used in barrel processing?"

Three words in the above question indicate that any mineral with lines of cleavage that would cause it to fracture easily could not be the best for barrel finishing practice. The element of mineral toughness might well warrant serious consideration as the answer to the problem of too frequent screening. Then too, a rock that required infrequent screenings might be expected to present a low ratio of surface wear, since its angles of contact would not wear away as rapidly as in softer



To obtain a sample of the Igneous Laprock discussed in this article (here illustrated) readers may write to Mr. Beaver or make use of the Reader Service Cards between the covers of the magazine.

# of Metal Products

By H. LEROY BEAVER
Beaver Barrel Finishing Research
Lansdale, Pennsylvania

and more friable minerals. With the latter, pieces having a plurality of angles to effect contact with like angles or grooves in the surface of a metal part to be processed, would, in the process of "barrel erosion" undergo erasure of the angles themselves. Hence, contact with metal angles and grooves would be mechanically impossible, because the mineral would have a plurality of curved surfaces.

Now with the problem before us as stated, a mineral that would show a long use-life, how might we best determine what such a mineral might be. Here again we go rather far afield from metal finishing for it would seem that any rock showing long and satisfactory use-life as a top surfacing for heavily traveled roads, might also be a valuable material for application to barrel finishing. One of the best known rocks used for road top dressing is known as "Diabase rock."

Upon visiting the quarry where this rock was being blasted out and processed, we learned that the rock itself was so extremely tough that it required far more than the ordinary charge of high explosive to break it down into suitable sizes to be processed by the rock crushers.

At this quarry we secured a quantity of rock for experimental work. A typical sample of the rock was submitted to the Geological Survey, Washington, D. C., for investigation by the Geochemistry and Petrology Branch.

This government agency reported as follows:

> "Of the samples submitted, the dark rock appears to be diabase. It occurs over large areas of the eastern states and is actively worked in hundreds of quarries. It is an igneous rock, consisting essentially of plagioclase feldspar (calcium sodium silicate) and augite (calcium-magnesium-iron-

aluminum silicate) with which are usually other minerals in minor amounts such as quartz, olivine, magnetite-ilmenite, apatite, etc. The hardness and toughness of the rock makes it valuable for road building material, railroad ballast and similar uses. It can be used architecturally, but it is too tough to be shaped easily. In general, the hardness of the mineral would be about 6-8 Mohs' Scale and its specific gravity about 3."

In the application of any abrasive material in barrel finishing procedure, the grain size is most important. So it also became important for us to investigate this diabase rock with respect to the grain size of the various minerals constituting the whole. We found that this material in its natural state had an even degree of grain size of its various constituents, a factor that we would not find in such minerals as granite or mica schist.

In experimental operations we discovered another important factor; namely, that this material was non-filling, that it could be used successively on brass, aluminum, iron or steel without having the crystalline structure fill with the metal or glaze over. Hence, under all operating conditions the surface remained clean and its cutting value apparently did not diminish with the reduction in size of the various pieces constituting the finishing mass. In many applications it can be simply worn away to nothing and only requires the addition of small quantities from time to time to keep the volume of

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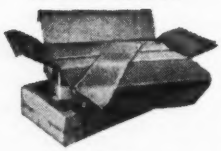

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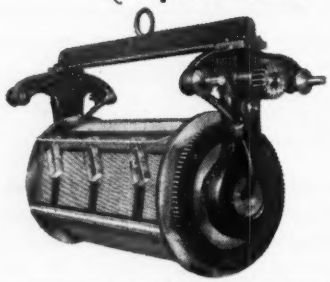

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the mass in the barrel up to proper operating load. The combined volume of parts to be processed and processing material should fill the barrel to slightly less than half full.

A test has been made to determine the effect of this particular mineral in a production cycle. We had a research client who had a problem effecting the finishing of large quantities of latches for casement windows. The problem was to finish these parts with a minimum of mechanical operations. We supplied them with a sufficient quantity of material to operate one barrel and after processing both brass and aluminum castings they decided on the material as standard for their regular barrel production work. They have now used the material for upwards of three years, and have found it quite durable and altogether satisfactory. The mineral was used in conjunction with another mineral material which we designate as our Nine Part Mineral Slurry, which will be described in a subsequent paper, and with the combination no conventional subsequent barrel finishing operation was necessary.

For the purpose of our own identification we term this mineral "Igneous Laprock," which indicates a mineral formed under intense heat and pressure.

The use of oil, grease or soap with this material in any surface removal operation is definitely not recommended. Nor is the mineral recommended for any final or bright burnishing operation on metal parts. A rule which you might follow in evaluating minerals for use in barrel finishing procedure may be stated as:

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"No mineral whose crystalline structure or grain size is clearly discernible to the unaided eye, will ever be satisfactory for final bright burnishing of metal parts."

Igneous Laprock is not a nostrum that will heal all barrel finishing ills nor in any sense a panacea that will accomplish unbelievable wonders in the removal of surface area by any barrel finishing procedure. We simply submit it as a completely acceptable, low cost, long life medium.

The use of crushed minerals, among them quartz, feldspar, limestone, sandstone, granite and mica schist, is definitely not new. All such materials were quite widely applied in barrel finishing procedure especially in New England. It was not until about 45 years ago, with the discovery of the application of hardened and polished steel cycle balls by Henry Edmonds in Birmingham, England, and the introduction of steel balls along with the Edmonds Barrel into the United States, that bright burnishing of metal products became an established practice. Down through the past 38 years of activity in experimental barrel finishing research, we have tried hundreds of materials both manufactured and natural, many of which we have described in previous discussions, and in all of this activity

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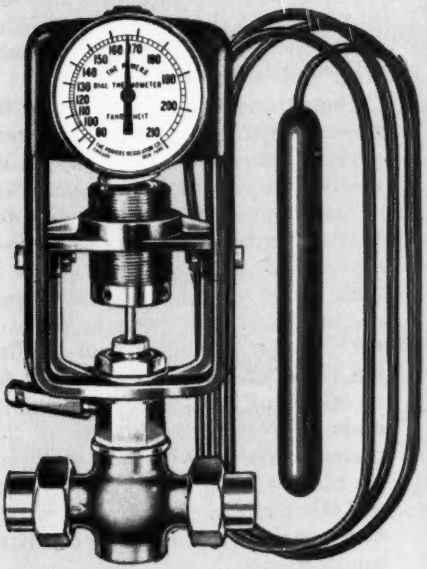

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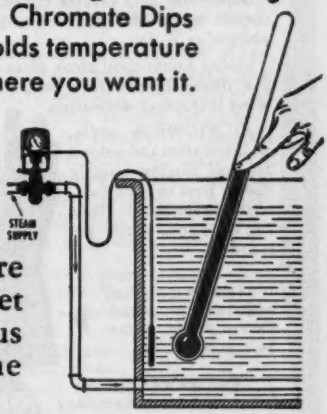
Holds temperature
where you want it.



Saves LABOR and Steam
Helps Eliminate Costly Rejects

Powers No. 11-MF Regulators are self-operating. They will help you get the most effective use from various solutions by holding them at the right temperature automatically.

Plastic Covered Thermal Bulb and Tubing—is highly resistant to solutions in above processes. Prevents electrical shorts. No insulators required for the regulator.

Easy to Read 4" Dial Thermometer—indicates temperature of liquid being controlled and makes it easy to adjust regulator for different temperatures.

Bulletin 330 describes this simple, dependable control. May we send you a copy? (b31)

THE POWERS REGULATOR CO., SKOKIE, ILL.
Offices in over 50 Cities, see your Phone Book • Established in 1891

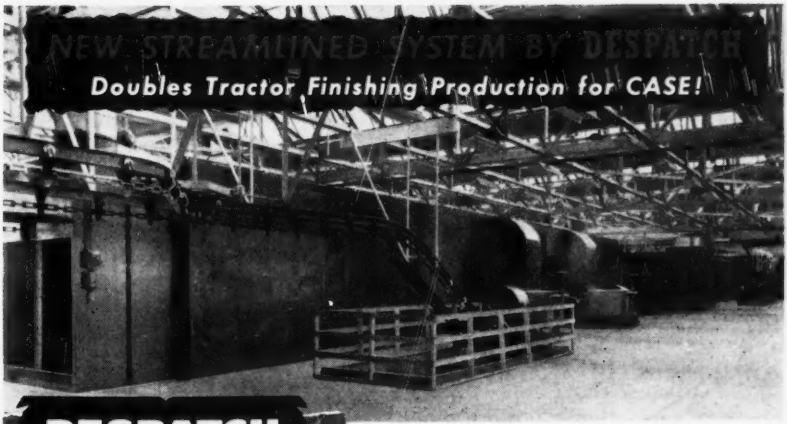
Stop a Wildcat!
Extra Tough Hand Protection
PIONEER
Stanzoils
Milled neoprene makes tough Stanzoils stand extra hours contact with oils, acids, caustics and solvents, Milled neoprene has higher tensile, tear resistance than any other oil resistant rubber.
Super-Safe grip creates confidence, speeds work—handles wet slippery objects as if dry.
Only a liquid-tight glove gives positive physical protection from conditions that cause dermatitis.
32 PIONEER styles, weights, sizes and colors. Stanzoil catalog quickly shows how to pick best, most economical glove for each job. Write for it today!
N-54 heavy weight all neoprene 14" length. Curved fingers, Super-Safe grip.
The PIONEER Rubber Company
285 Tiffin Rd., Willard, Ohio
STANZOIL
PIONEER

P.S. If your glove problems are unusual because of the nature of your product finishing operations, PIONEER welcomes the opportunity to help you solve them. Write us about your needs and problems — you'll save money, improve your glove service.

we have thus far found only one natural mineral that we would recommend for final bright finishing with soap and water lubricant.

Something of the difference between mineral and metallic materials is evidenced by their comparative relation of weight to volume. Most of the minerals that can be adapted to barrel finishing will do well if they average 25 pounds to the peck in bulk. Steel materials will average a minimum of 100 pounds to each peck. In an average barrel holding ten pecks of finishing materials for its operating load, we have with minerals a gross load pressure of 250 pounds, whereas with steel materials we have a maximum load pressure of 1,000 pounds. You may draw your own conclusions from this comparison of loads.

For removing burrs from steel or other stampings, the Igneous Laprock we have described will not be satisfactory; nor do we feel that any other mineral having a discernible grain size will be satisfactory either. If you ever visited a strip rolling mill where the steel is processed to secure the finest surface skin, you were impressed with the meticulous care exercised by the rolling superintendent in having his rolls kept to a mirror smoothness and reflectivity. If we undertake to remove burrs from the edges of stampings formed from this fine surfaced material we accomplish two things: first, the removal of the burrs, but along with the operation we criss-cross the finely rolled surface with thousands of scratches, which, in many cases, no amount of subsequent barrel finishing procedure will eliminate.



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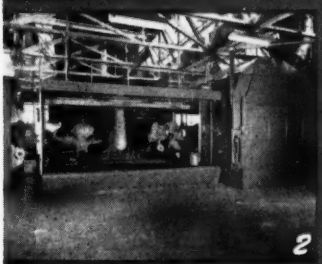

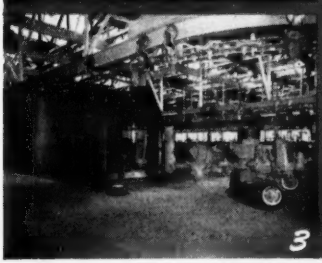

A FINISHED TRACTOR *every 5 minutes!*

Tractor finishing at the J. I. Case plant, Rock Island, Ill., has been doubled and quality of finish raised to a new high with this modern finishing system designed, built and installed by Despatch. Housed in a new, well lighted building the system is giving Case tractors a rich, durable baked on finish in the familiar Case Flambeau Red. The operation includes washing, painting and finish baking.

1. 600-ft. continuous conveyor enters 3-stage washer where tractor gets a 160° F. phosphate wash, cold water mist bath, and 180° F. hot water rinse.
2. Tractors are spray painted in staggered water wash booths. Paint is heated to 170° F. —eliminates need for thinner and allows closer spraying to cut down overspray.
3. A lasting, weather resistant finish is baked on at 225° F. in this 96-ft. oven heated by steam from the Case central steam plant. Emerging from the oven, tires and other accessories are added.

Let Despatch Modernize Your Finishing Operations

Replace your obsolete finishing system with a modern Despatch system engineered to fit your needs. Increased production, higher quality and lower costs will result.

Write, wire or call Dept. C for details.

DESPATCH

Minneapolis Office: 619 S. E. 8th Street

Chicago Office: 4554 N. Broadway

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Stop a Wildcat!
Extra Tough Hand Protection
PIONEER
Stanzoils
Milled neoprene makes tough Stanzoils stand extra hours contact with oils, acids, caustics and solvents, Milled neoprene has higher tensile, tear resistance than any other oil resistant rubber.
Super-Safe grip creates confidence, speeds work—handles wet slippery objects as if dry.
Only a liquid-tight glove gives positive physical protection from conditions that cause dermatitis.
32 PIONEER styles, weights, sizes and colors. Stanzoil catalog quickly shows how to pick best, most economical glove for each job. Write for it today!
N-54 heavy weight all neoprene 14" length. Curved fingers, Super-Safe grip.
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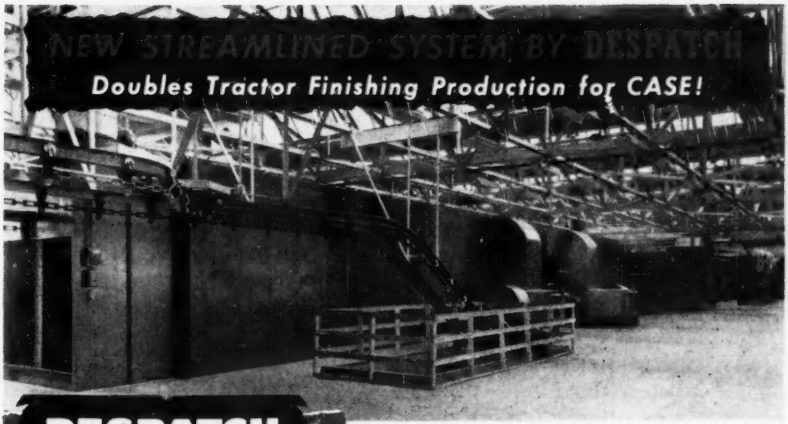

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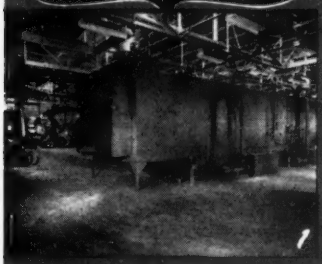

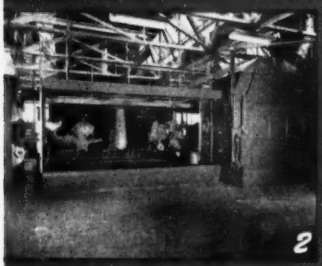

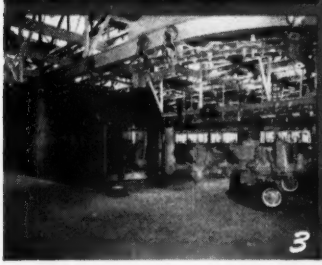

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Write, wire or call Dept. C for details.

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Of course complaints have come to us that steel materials are not satisfactory for burr removal, and that minerals are better, but in every case we have found that hardened and polished steel materials instead of dead soft annealed materials were used. Soft annealed steel materials will bite into and erase burrs, provided they are not too pronounced, while hardened steel materials will only fold the burrs back onto the surface of the part and render them even more difficult to remove.

There is one other characteristic of Igneous Laprock that we might mention. When the rock is put through the crusher, it does not break down into cubical forms, but splinters into elongated spears which, in operation, seems to have something of a sliding action as they pass over the parts in process—a decided advantage.

If you have asked that your name be placed on the mailing list to receive samples of the various materials that we plan to discuss, you will already have your sample of Igneous Laprock. If you have any question as to the application of the material to your own work, you are of course invited to write and we will give you the best information we can.

Distributors in Principal Cities

FILTER

*Reg. App. for

50-1500 GAL/HR

ANY ELECTROPLATING SOLUTION

NO PITTING NO ROUGH DEPOSITS

Model LSIN-10
Cap. 100 gal/hr

• Filters all solutions from pH 0 to pH 14. • No loss of precious solutions. • Filter Assemblies—H.T.Lucite, SS 316, Rubber-Lined, Haveg or Sethrin*. • Filter Tubes—Cotton, Dynel, Porous Stone, or Porous Carbon. • Pumps—SS 316, Hastelloy, Plastic; Centrifugal or Self Priming.

Sethco MFG. CO.

70-72 Willoughby St., Brooklyn 1, N. Y.

Sensitive Corrosion Measurements With An Interferometer

(National Bureau of Standards Summary Technical Report 1768)

AN interferometer procedure is being used at the National Bureau of Standards for studies of the corrosion resistance of such materials as optical glass, porcelain enamel, quartz and other natural and artificial silicates, and various metals. The method is believed to have value for comparing and predicting the chemical durability of various materials. Although interferometers have been widely used in science and industry for such problems as checking the accuracy of block gages, measuring expansion, and checking optical "flats," they have apparently been used very little in previous studies of corrosion resistance. With the highly sensitive interferometer method, corrosion to a depth of as little as 1 or 2 ten-millionths of an inch can be detected on optically flat specimens.

In the NBS technique, devised by Robert G. Pike and Donald Hubbard of the Bureau's mineral products lab-

N.J.M. Announces the Availability of Non-Allocated Nickel Anodes!

Manufactured from Grade "A" Scrap Under A.S.T.M. Specification B-39-22

ELIZABETH, N. J.—It was announced by Mr. A. Kerzner, vice president of New Jersey Metals Company, Elizabeth, N. J., that, as a result of increased plant facilities, his company is now in a position to supply non-allocated, standard oval shaped nickel anodes in substantial quantities. Heretofore, the bulk of the company's nickel anode production has been confined to a reconversion service of anode ends and stubs to new anodes.

In reply to questions concerning the procurement of the nickel, the comparative costs and the quality of the scrap nickel anodes, Kerzner stated that his company buys pure nickel scrap at the current scrap market price, melts and casts it in their own foundry, and sells it at cost plus the standard casting fee.

Insofar as comparative costs between new and scrap nickel anodes, the latter is more expensive but not prohibitively so. Actually, the price of the scrap nickel anode is in direct proportion to the price necessary to buy the scrap. The casting fee remains the same regardless.

The quality of scrap nickel anodes measures up to the finest new nickel anodes on the market and are guaranteed as such by New Jersey Metals Company.

Kerzner further stated that for the past six months extensive tests have been made by some of the largest plating plants in the country, and in each case the report has been highly favorable.

Call ELizabeth 2-6465 or wire immediately for prices and complete information.

New Jersey Metals Co.

Serving industry from coast to coast since 1920

710 ROCKEFELLER ST., ELIZABETH 2, N. J.

N.J. METALS

Fig. 1—Using an interferometer at the National Bureau of Standards to measure the amount by which a corrosive solution has eaten away the surface of an optically flat specimen. This highly sensitive method of studying chemical durability permits detection of corrosion to a depth of as little as 1 or 2 ten-millionths of an inch.

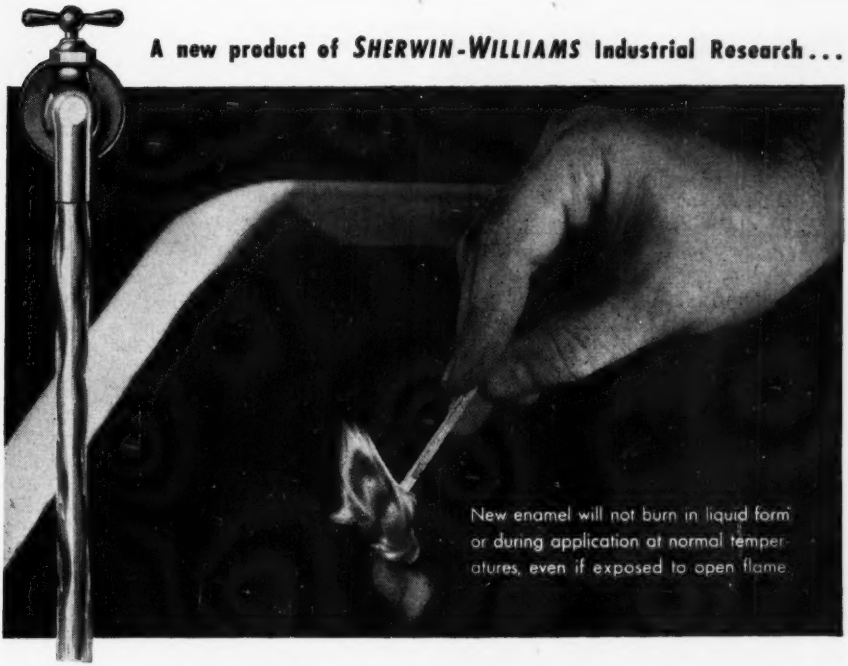
oratories, specimens are ground and polished to optical flatness and then immersed to half their depth in the desired corrosive solution. After the desired length of time they are withdrawn, rinsed and dried, and covered with an optically flat piece of quartz. Using a conventional interferometer viewing apparatus of the Pulfrich type, and with an unfiltered helium lamp for illumination, the displacement of the optical interference fringes at the level-of-solution line of the specimen is observed.

As seen by the observer looking into the eyepiece of the instrument, these interference fringes are vertical parallel lines. If the uniform flatness of the specimen under study has not been impaired by the corrosive solution, these fringes are straight and continuous. However, if the previously-immersed part of the specimen surface has been sensibly attacked, each of the vertical fringes is shifted laterally at the point where it crosses the change-of-thickness line. If as sometimes happens the solution has caused swelling of the specimen, the lateral shift is in the opposite direction. A lateral shift equal to the space between two adjacent fringes corresponds to a dimensional change in the specimen amounting to one-half wavelength of light, or roughly 0.3 micron. (A micron is a millionth of a meter or about 0 millionths of an inch.) With careful use of the interferometer, changes in specimen thickness of as little as 0.003 micron can be detected.

Silicates studied by this procedure at NBS were quartz, fused silica, opal, obsidian, flint, and pitchstone. Porcelain enamels studied were acid-resistant, class A; "glass-lined" tank; and acid-resistant, class D. Metals were cold-rolled steel, aluminum, copper, brass, silver, and platinum. The corrosive agents ranged from concentrated sulfuric acid (H_2SO_4) to 5-per cent sodium hydroxide (NaOH) solution. Exposure times were as short as one minute and as long as several weeks. Temperature in most cases was held at 80 deg. C.

A number of interesting and sometimes unexpected results were obtained. Swelling of the immersed surface, rather than attack, was found in several cases. For instance, crystalline quartz showed definite swelling after 2 weeks at 80 deg. C. in an acid solution (pH 4.1). Opal—like quartz, a

A new product of *SHERWIN-WILLIAMS* Industrial Research . . .



New, WATER-reducible enamel
cuts fire hazards . . . retains top film properties

- **REDUCES FIRE HAZARDS during application and storage**
- **ELIMINATES EXPENSE for reducers . . . requires only water**
- **REDUCES PAINTING FUMES and ODOR**
- **PROVIDES CONVENTIONAL FILM PROPERTIES**

One of industry's biggest problems—the fire hazards present during application of conventional finishing materials—now can be reduced or eliminated.

Sherwin-Williams Water-Reducible Enamel—a product of extensive research and experience in industrial emulsions—utilizes only *water* as a reducing agent. It will not burn, in liquid form, at normal room temperatures, nor during spray or dip application, even if exposed to open flame. It produces a very hard gloss finish with properties equal or superior to conventional organic solvent enamels. Cured film is not water soluble.

Water-Reducible Enamel is available in black for finish of machine or metal parts of all types—can also be supplied in colors. Contact your Sherwin-Williams Industrial Representative for details, or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

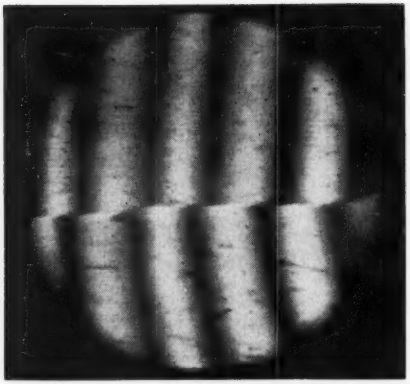


Fig. 2—Photo of a typical fringe pattern as seen through the eyepiece of the interferometer at NBS. Swelling of the lower half of the specimen—the half that was previously immersed in a corrosive solution—has caused displacement of the fringes (dark vertical bands) to the left. Here the shift amounts to about ¼ fringe. (A shift of 1 fringe indicates a dimensional change in the specimen of about 12 millionths of an inch.)

form of silica (SiO_2)—showed swelling of nearly 1 fringe of light at pH 2 and continued at a similar level to about pH 8; between pH 8 and pH 11, however, the swelling changed rapidly to an attack of 3½ fringes. Although brass was attacked by strongly acid and strongly alkaline solutions, there was a slight indication of swelling in the more nearly neutral solutions. Such apparent swelling could perhaps be caused by the formation of a layer of insoluble salt having greater volume than the metal from which it was formed. Of the metals studied, only platinum showed no detectable dimensional change under the laboratory conditions. The three types of porcelain enamels studied varied widely in their chemical inertness as indicated by the test.

NOTE: For further details, see "An Interferometer Procedure Applied to the Study of the Chemical Durability of Silicates, Enamels, and Metals," by Robert G. Pike and Donald Hubbard, J. Research NBS *50*, 87 (Feb. 1953), NBS Research Paper 2394. See also, "Studies of the Chemical Durability of Glass by an Interferometer Method," by Donald Hubbard and Edgar H. Hamilton, J. Research NBS *27*, 143 (1941), NBS Research Paper 1409.

The ancient Chinese were the first to produce the alloy known today as nickel silver. They called this metal—a combination of nickel, copper and zinc—"paktong," which meant "white copper." The alloy was later referred to as German silver and finally as nickel silver.

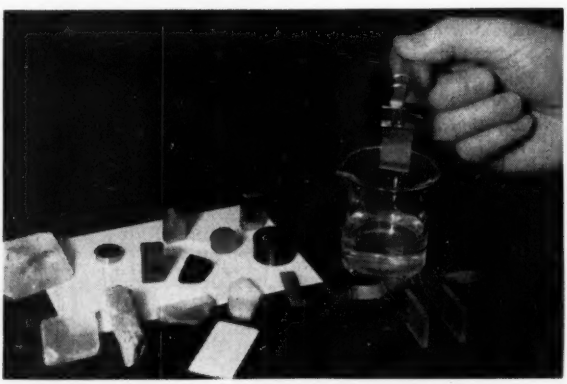
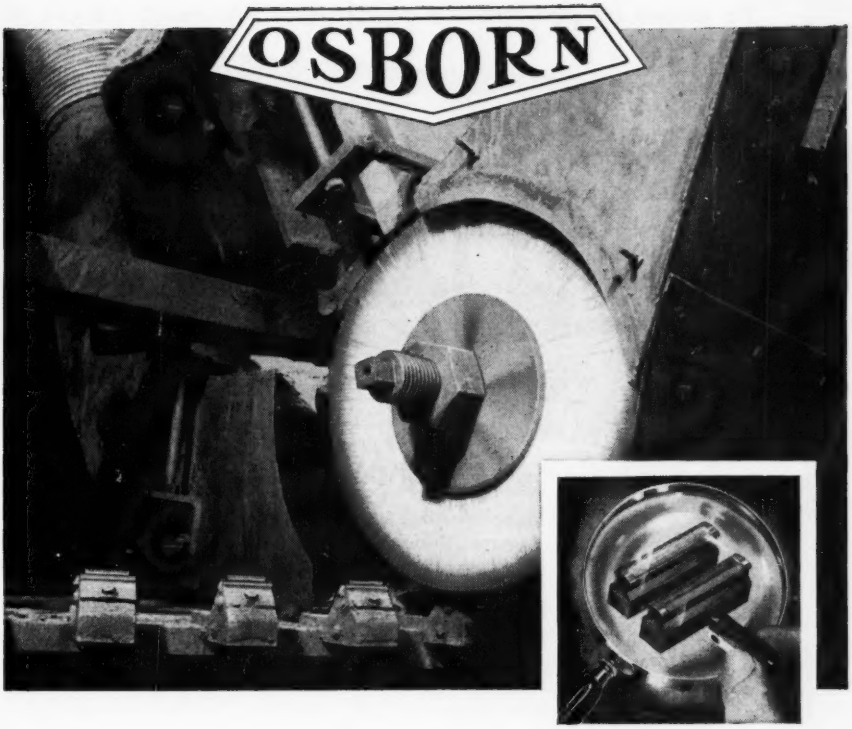


Fig. 3—Withdrawing an optically flat specimen of glass from a beaker of corrosive solution in which the specimen has been immersed to half its depth. At the left are a number of other specimens whose chemical durability was studied at NBS by the sensitive interferometer method. Materials include silver, platinum, brass, porcelain enamel, and various natural and artificial silicates.

(Photographs courtesy National Bureau of Standards, Washington 25, D. C.)

OSBORN



Takes off metal whiskers 6 times faster

...IMPROVES QUALITY

Your Problem may be far removed from the deburring of electric shaver heads . . . but, if it involves cleaning or finishing of any kind, the answer may be found quickly with the help of your **O**sborn **B**rushing **A**nalyst.

Here, he helped convert a hand operation to automatic power brushing that greatly improved the product and increased output.

The job: To remove fine burrs at the slots of shaver heads and blend the surface junctures at the ends. The **OBA** helped develop the application of two Osborn brushes to an automatic "push-button" operation. Shaver heads are mounted in clamp fixtures on a rotating table. One brush runs clockwise and the other counter-clockwise, producing perfectly smooth, uniform surfaces. One operator turns out more than 1000 pieces per hour, compared to an output of about 150 per manhour formerly.

An Osborn Brushing Method can benefit *your* cleaning and finishing operations. Call your . . . **OBA** or write *The Osborn Manufacturing Company, Dept. Q-11, 5401 Hamilton Ave., Cleveland 14, Ohio.*

FREE: *New booklet on deburring with Osborn Power Brushing. Write for your copy.*

Osborn Brushes

OSBORN BRUSHING METHODS, POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

To users of phosphate coatings, Pennsalt offers the

New

FOSBOND

A complete system linking together supplies and operations . . .

a complete set of compounds...

for cleaning, pickling, phosphating, and rinsing . . .
all from one reliable source—Pennsalt

applied in a balanced cycle...

tailor-made by Pennsalt engineers to fit your
operations and equipment

serviced and maintained...

by experienced field servicemen on a
regular, scheduled basis

advertised and merchandised

to help pre-sell your quality finish
to wholesalers, dealers, and consumers

At Pennsalt's famous Whitemarsh Research Laboratories, where Fosbond was developed, there are unusually fine testing facilities at the disposal of manufacturers using the Process.

Process

for trouble-free processing... for a better, longer-lasting finish

Now Pennsalt, long a pioneer in the metal processing field, offers everything you need for uniform, trouble-free phosphatizing of steel and zinc!

Products and processing have been engineered to (1) provide an excellent pre-paint corrosion resistant surface, (2) offer simplified operation through the entire balanced cycle, (3) be usable with standard equipment, and be compatible with standard organic finishes.

Every product and technique now offered has been fully field-tested for two years or more. Experienced Pennsalt specialists are ready to come into your plant to show you how to get the most from this advanced system. Furthermore, once the cycle has been introduced in your plant, these men will continue to help you maintain a trouble-free system.

There is no fee for the Process. Reasonably priced chemical products are your only expense.

How's this for proof?

To prove what we say about the Fosbond Process, we offer this service: tell us (1) type of metal to be coated, (2) kind of phosphate coating now used, (3) method of application to be used, (4) kind of organic finish to be employed, and (5) conditions which finish must meet. In turn, we will supply either panels coated by means of the Fosbond Process, or Fosbond chemicals for your use in preparing panels. Then, subject these panels to whatever tests you wish . . . and *you* be the judge.

Which of your products and operations can benefit from the Fosbond Process? Give us details on these items; we'll be able to answer your questions more specifically. Write to Metal Processing Department, 423 Widener Building, Philadelphia 7, Pa.

A better start for your finish

Pennsalt Chemicals

PENNSYLVANIA SALT MANUFACTURING COMPANY

A Valuable Fosbond Extra!

The Fosbond Process has received the famous *Good Housekeeping* "Seal of Approval". Manufacturers who qualify may affix to their products the colorful Fosbond emblem which incorporates the Good Housekeeping seal. To help Fosbond users get full advantage from this merchandising "plus", the Fosbond story is told in ***The Saturday Evening Post, Good Housekeeping, U.S. News & World Report, Business Week, Electrical Merchandising, Department Store Economist, Implement & Tractor,*** and ***Office Appliances.***

News about UNICHROME

Trade Mark

How a company cut 6-hour plating job to 3

Shafts used in airplanes were being hard chromium plated for wear-resistance. Chromium had to be deposited .012" beyond finish size on one end in order to get required thickness on right angle shoulder at the other end. Parts were then ground to tolerances. Plating alone took 6 hours.

The ordinary chromium plating bath being used was then converted to the Unichrome SRHS Chromium Plating Solution. The change in results was startling. Chromium had to be deposited just .008" oversize because the plate not only covered angled surfaces more uniformly but also more smoothly. Moreover, since the SRHS solution plated twice as fast as the ordinary bath, it cut plating time to only 3 hours. And with ⅓ less chromium to remove, still more time was saved in finish-grinding.

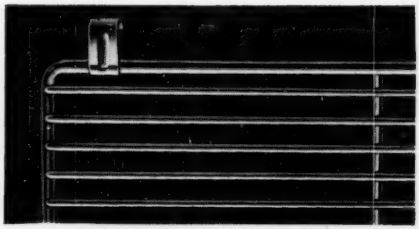
Formula for a lasting chromium-bright zinc finish

Here's the "substitute" finish that became standard for so many products because of its quality. First, a plate of .0002" to .0005" of zinc on the product. Then a quick dipping in Unichrome Clear Dip Solution for brilliance and corrosion resistance. Lastly, a Unichrome Clear Enamel which seals in the brilliance despite handling and exposure.

Answers to four

Unusual requirements of four

Finding answers to metal finishing problems can be time-consuming and difficult – especially when metal fabricators attempt the solution unaided. Experience shows that time and money can be saved when a finishing specialist is consulted. Here's what happened in four typical cases.



$15,000 SAVED IN A YEAR

A midwest refrigerator manufacturer coated chromium plated shelves with clear enamel to prevent rusting at the welds. But the coating had poor resistance to wear.

ONE PRIMER MEETS MANY DIFFERENT NEEDS

Unichrome Primer AP-10 combines many properties not usually obtainable in a single priming material. For instance: It can be either air-dried or baked. It dries fast. Its adhesion equals that of standard primers on steel – surpasses them when applied to light metals. It is applicable to different materials including magnesium, aluminum, zinc, tin, cadmium, iron, steel, copper – even glass.

COATINGS for METALS

Metallic . . . . . Organic . . . . . Decorative . . . . . Protective

brass and wire finishing problems

companies met by special Unichrome organic coatings

United Chromium, called in on the problem, provided a clear enamel developed especially for chromium to seal out corrosion. With just a single application, this Unichrome "Clear" gave double the former film thickness – also a coating that could take more abuse. And despite the thicker film, a $15,000 yearly saving on materials.

STILL "OK" AFTER TWO YEARS

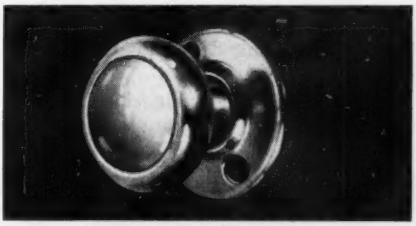
One finisher of dish drainers couldn't find a coating tough enough to withstand severe commercial service.

A Unichrome Plastisol was recommended. Baskets with this thick, flexible coating are still going strong after 2 years. Never before had previous coatings stood up so long.

EXCEEDED SPECIFICATIONS 20 TIMES OVER

Specifications for brass refrigerator trim called for a finish to withstand 500 hours of 100% relative humidity at 110 F. The clear enamel being used by this Ohio company failed to stand up, causing a production snag.

Consulted on the problem, "The Unichrome Man" was confident it could be solved. Samples were submitted and tested by the company. Results were extraordinary. The corrosion-resisting Unichrome Clear Enamel was adopted after 500 hours. But it then went on to remain in perfect condition for 11,850 hours – that's 493 days! – when attempts to break down the coating were discontinued.



IMMUNE TO PAINT REMOVERS

With doorknobs subject to spattering from housepaints, a lock manufacturer was looking for a clear finish that would remain unharmed when knobs were cleaned with paint removers. United Chromium solved this unusual requirement with an unusual baking clear synthetic – one with resistance not only to solvents but also to handling, moisture and exposure.

* * * *

United Chromium has over the years developed a unique line of finishes to satisfy not only the ordinary but also the unusual requirements. To see about a better finish for *your* products, write, giving details of the problem.

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Practical Applications of modern products

Burr Removal Expedited by Wet Tumbling

By HARRY C. LARSON
Superintendent of Screw Machine Manufacture, West Pullman Works, International Harvester Co., Chicago.

ECONOMY in hand labor and in handling is attained at West Pullman Works of International Harvester Company by the wet stone* tumbling of screw machine products and stampings to remove burrs. This barrel tumbling installation (Fig. 1) is adjacent to the screw machine department which produces a majority of the products processed. The barrels also deburr stampings from another department.

Parts typical of those thus processed are shown before and after deburring in Figure 2.

Steel parts such as the circular felt retainers, the largest parts shown in Fig. 2, usually are mixed with an equal weight of No. 3 granite Roto-Finish chips in a wheeled charging pan or dolly, such as that shown in Fig. 3, and a total of 700 pounds of the mixture is then placed in each compartment of the barrel. This is done by hoisting the pan so that its discharge chute is above one of the barrel openings in which a sturdy basket-like steel frame is placed to absorb the impact of parts and chips so that barrel linings will not be injured.

When each compartment is about half full, water is added to cover the parts and two pounds of powdered compound are added to each compartment, after which compartment covers are fastened in place and barrels are rotated at 23 rpm. usually for a time varying from ¼ to 1½ hours. If burrs on parts are unusually heavy, longer tumbling is done. Different barrel

* Stones used are granite chips from which sharp edges are worn off.

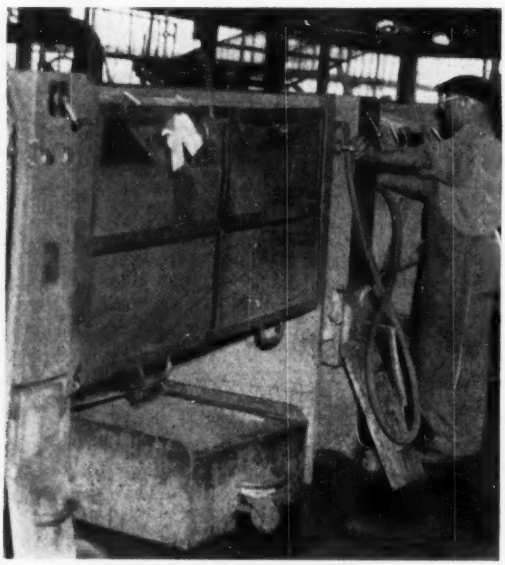


Fig. 1—Part of the row of two-compartment rubber-lined No. DW 60-2 Roto-Finish barrels used at International Harvester's Pullman Works to deburr screw machine products and small stampings at a rapid rate.

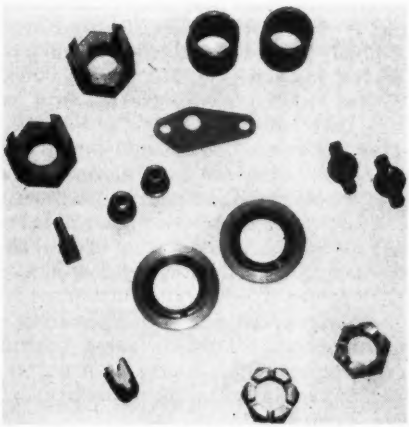


Fig. 2—Typical steel parts deburred by wet tumbling with Roto-Finish granite chips and tumbling compound.

speeds can be used if a variable speed motor is applied.

Upon completion of this tumbling, barrels are stopped, covers are removed and barrel compartments are flushed out with water, after which the charge is dumped into the same pan used for charging.

To separate parts from chips, the pan is then transferred to the shaker screen separator, Figure 4. There, parts and chips are discharged in batches. As each batch is shaken, the stones fall through the screen and into another pan. Parts remaining on the screen feed or are raked off onto a bench and into another pan.

When necessary, the deburred parts are dipped into a rust inhibitor before transfer to other departments. Parts on which oil, grease or dirt has accumulated before they are ready to be tumbled are washed clean before tumbling, as such deposits have to be kept off chips and barrel linings.

For all parts, the size of chips has to be chosen so that chips will not lodge in holes or recesses and yet will perform the deburring required. In general, the largest size of chip that will meet these needs is the one chosen, as it tends to cut faster than smaller sizes.

Among parts processed in large volume are castle nuts, such as appear in

Fig. 3—Hoist pan carrying an 800 pound load that includes equal weights of No. 1 granite chips and castle nuts ready to be charged into one of the two compartments of the Roto-Finish barrel shown.

Figs. 2, 3, and 4. With a charge otherwise the same as for felt retainers, a 15 minute tumbling with No. 1 granite chips produces adequate deburring. This may leave some small burrs, especially in slots, but they are not objectionable. The large chips give fast cutting action and do not lodge, of course, in the hole or slots. In parts such as slotted nuts, complete burr removal is not required, hence tumbling is continued only long enough to attain the desired condition.

Stampings punched from plate stock, in the shape shown at right center in Fig. 2, receive the same 1½ hour tumbling as for the felt retainers, using the same compound and the same No. 3 size of granite chips. The three-hole stamping, upper center Fig. 2, blanked from thinner stock, is given a 1 hour tumble, using No. 1 granite chips. The hex nut blank (top left in Fig. 2) having a single deep and wide slot milled across one side, is deburred in 15 minutes with No. 4 granite chips, a size that enters the slot but does not jam in it. Burr removal may not be complete, but is sufficient to meet requirements.

Knob like screw machine products having an axial hole (left center in Fig. 2) are deburred with No. 8 chips, a size that will pass through the hole. This requires 1 hour. Equal weights of chips and parts are used along with 2 pounds of compound per compartment.

Parts made on screw machines from square bar stock and having about half the length turned to cylindrical shape (left center in Fig. 2) are deburred in 15 minutes using No. 1 Roto-Finish granite chips. Tubular parts having cross holes at the center (top center, Fig. 2) require a 1½ hour tumble using No. 3 chips.

For the domed shaped piece (lower left in Fig. 2) separate tumbling operations are performed. In the first, done after screw machine operation, tumbling requires 20 minutes with No. 1 granite chips. This helps to insure proper seating of parts in the broaching fixture used when slots are produced. After broaching, burrs left are removed by another 15 minute tumble using No. 1 granite chips.

When chips and parts are nearly the same

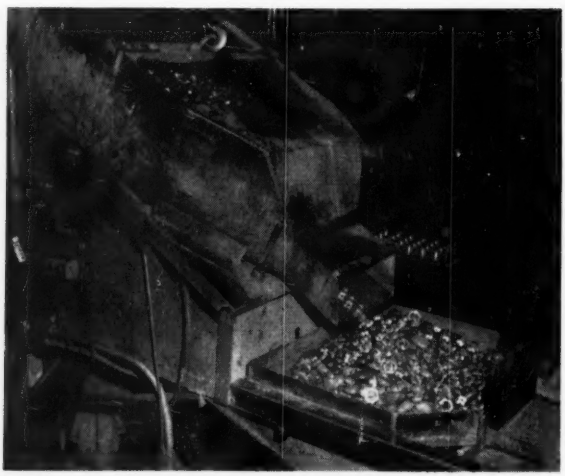


Fig. 4—Discharging the load of castle nuts and No. 1 granite chips onto the shaker screen by which the deburred parts and chips are separated. Parts remain on the screen but chips pass through and are ready for reuse.

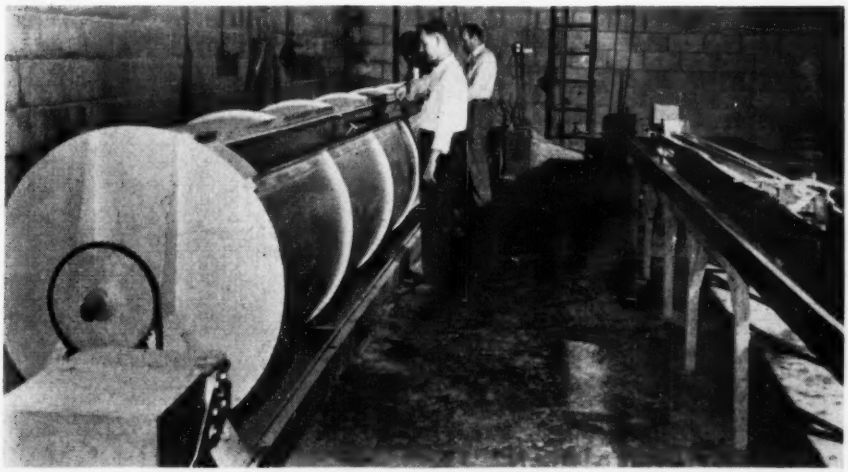
size, a separation by screening may not be satisfactory or complete. In this case, a hand type of magnetic separator, called a "Magnetool Multilift," is used. It is held at the surface of a batch and is magnetized by a trigger switch, then attracting the adjacent steel parts. Then the tool is shifted over a tote box onto which the parts drop as the trigger is released. These operations are repeated several times on a batch in a pan. It requires more time than screening separation but is faster than using hands only and serves well enough when no continuous rotary magnetic separator is available.

Deburring by tumbling, as here described, is a fast operation and meets requirements on a large variety of parts. All the parts above mentioned are of steel, but other metals are as readily processed when the correct selection of chips and compounds is made.

Porcelain Enameling Steel Pipe

TO complete the sequence of operations for the successful application of porcelain enamel coatings to long lengths of black steel pipe, the Barrows Porcelain Enamel Company, Cincinnati, has designed and built a dipping machine and drying unit.

In the application of ceramic coatings to pipe, the first operation is a thorough sandblasting inside and out. Next the "slip," or wet enamel, must be applied to the metal base. This slip is a water vehicle solution and can be either dipped or sprayed. For uniform application and close control of thickness, Barrows elected to apply the slip in a dipping operation. This meant that pipe as long as 21 feet had to be coated completely both inside and out. The excess slip had to be drained away for uniform application on all exterior and



Dipping troughs (right) and drying chambers (left) designed for porcelain enameling pipe at Barrows Porcelain Enamel Company.

interior surfaces of the pipe.

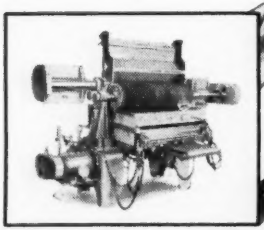
The dipping unit evolved to do this operation consists of two long troughs to hold enamel slips. One trough has ground coat material and the other contains cover coat material. Between the two troughs is a third shallow trough with fittings at each end to hold any length of pipe up to 21 feet. This center trough is pivoted at one end and can be swung up to a 45 deg. tilting position. At the same time, pipe held in this trough can be made to revolve. The operation then is to immerse a length of pipe in one of the troughs of liquid material. A pump forces the material through the inside of the pipe to prevent entrapped air pockets. The pipe is then lifted out of the dipping trough and put into the draining trough. By means of a timing device, the trough is raised to the tilted position, revolved, and held for a specified length of time before returning to horizontal for removal of the pipe.

The second piece of equipment is made to dry the pipe. The removal of moisture from inside of a piece of pipe proved somewhat difficult. Air passing through the inside of the pipe would become quickly saturated. As it traveled further, it would condense the moisture out in the form of solid water. This water would wash the unfired coating off the inside of the pipe. The drying apparatus designed and built by Barrows to solve this problem consists of a series of 15 chambers mounted in rotary fashion. Each chamber will hold

to page 74

SURFACE FINISHING HAND TOOLS?

The Model 206-A is equipped for either magnetic or mechanical holding fixtures.



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SURFACE FINISHING MACHINE

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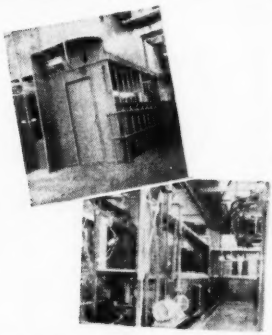

Complete Finishing Systems for Enamel, Lacquer, Paint or Varnish—including Metal Cleaning and Rust-Proofing Equipment—Dry-Off Ovens—Hydro-Whirl Spray Booths—Filtered Air Supply Systems—Drying and Baking Ovens and Overspray Reclaiming Systems. Hydro-Whirl Dust Collecting Systems and Other Units of Special Production Equipment.

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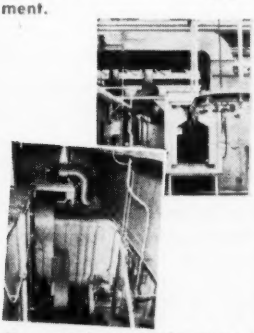

Illustrated in the "Package" is a complete P-D Paint Finishing System which handles 700 electric food mixers hourly . . . so compact that it requires but two 20' x 20' bays . . . It consists of a 6-stage cleaning and rustproofing machine with automatic charging and automatic centrifugal chemical reclamation devices . . . a separate moisture dry-off oven . . . necessary cooling space . . . a completely enclosed spray operation with conditioned air supply . . . supply equipment on the floor adjacent to overhead bake ovens . . . bake oven heaters underneath ovens . . . material flows from bake ovens to assembly and packaging in next bay.

A P-D installation means one responsibility for final, satisfactory results—means the performance of a Finishing System that you can rely upon for smooth, efficient, integrated operation and high quality work at lowest possible costs.

Hydro-Whirl Paint Spray Booths *Industrial Washing Equipment*
Drying and Baking Ovens *Hydro-Whirl Dust Collecting Systems*

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A NEW BRIGHT NICKEL PROCESS

H-VW-M takes great pleasure in presenting Nickel-Lume, a superior new bright-nickel electroplating process. Nickel-Lume addition agents are of the organic type, yet have none of the inherent faults and limitations of previous organic agents. A result of several years of careful research and development, Nickel-Lume has been subjected to stringent field tests both in job shops, with a wide variety of work and plating problems, as well as in large plant production using full-automatic equipment. In every test, Nickel-Lume has shown excellent results, a *really bright finish directly from the plating bath* with all these marked advantages:

OUTSTANDING BRIGHTNESS—full, bright deposits over a wide range of operating conditions. Relatively thin deposits, too, are *really bright;* lustre builds as thickness increases. Even intricate, deeply-recessed articles have uniform brightness without shading.

LOW INTERNAL STRESS—stress can be controlled to a low value on either the compressive or tensile side and *held* within satisfactory limits as the solution ages—no cracking, crazing, lifting, or brittleness of deposits

HIGH DUCTILITY—comparative nickel tests show surprising ductility—even after continued bath use in production.

GOOD LEVELING—in normal deposits surface roughness is reduced 50% more. Costly polishing and buffing can be substantially reduced.

WIDE CURRENT DENSITY RANGE—without noticeable change in brightness, current density can vary from below 5 to above 70 asf. Plating speeds can change to meet various production schedules and specifications.

WIDE SOLUTION TEMPERATURE RANGE—baths may be operated at room temperature with full deposit brightness up to and beyond 140°F. With moderate to high current densities, a temperature above 120°F. is seldom required.

GOOD STABILITY—no breakdown of addition agent,

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Your H-VW-M combination — of the most modern testing and developing laboratory — of over 80 years experience in every phase of plating and polishing — of a complete equipment, process and supply line for every need.

INDUSTRY'S WORKSHOP FOR THE

LUME

BY HANSON-VAN WINKLE-MUNNING COMPANY

therefore no cloudy, brittle, or highly-stressed deposits. No time-consuming, costly "stripping" operations.

HIGH TOLERANCE TO IMPURITIES—no bath "upset" by a few milligrams of metallic or organic impurities. As a rule, organics are tolerated in greater concentrations than in other bright baths.

SUPERIOR THROWING POWER—equal to or better than other commercial processes. Deposits-even in recessed areas—have uniform brightness without shading.

GOOD CORROSION PROTECTION QUALITIES—addition agent nature plus constant deposit characteristics give a high level of protection to the plated surface.

SIMPLE CONTROL—all constituents, including addition agents, can be determined and controlled by chemical analysis, thus maintaining deposits at constant and optimum characteristics.

PLEASING WHITE COLOR—approaching well-known cobalt-nickel deposits in whiteness of color—not the unappealing, yellow cast usually associated with organic addition agents.

NO OBJECTIONABLE FUMES—*ventilation is not required*—bath temperature is low, and no obnoxious or dangerous fumes are given off.

HIGH DEPOSIT ACTIVITY—deposit surfaces are exceedingly active and accept chromium or other deposits without activating treatment. In some installations, work with defective surfaces goes right back through normal plating cycle without blistering of nickel-on-nickel.

LOW INSTALLATION COSTS—all that is needed is equipment for a Watts nickel bath. Filtration can be periodic or continuous. No ventilation is required. Heat demands are low. Existing auxiliary equipment can be used.

LOW OPERATING COSTS—initial cost comparable to other bright nickel baths *but*, cost of brightener replenishment is much lower. Control is simple. No frequent pumping out and bath treatment. No production loss through sudden failure of bath to perform satisfactorily. Regular non-premium anodes are used.

Another result of *Platemanship* in action, Nickel-Lume is available NOW. Complete details and instruction manual will be forwarded on request.

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H-VW-M

FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

one length of pipe. Steam-heated air is then introduced to the chamber to flow around the inside of the pipe. This item of equipment, although large and expensive, proved to be the only practical method of solving this annoying problem. The drier will handle in excess of 4,500 lineal feet of pipe per shift.

The Barrows Company points out that three special units of equipment—furnace, dipping unit, and drier—form but part of the entire picture. The unseen portions would be the various and numerous problems of formulation of glass, milling procedures, draining and setting of the wet slip, fusing temperatures and all the other controls and knowledge needed for successful porcelain enamel application.

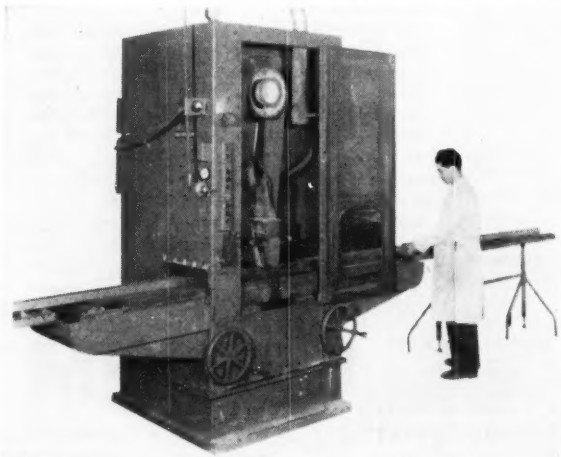
Polishing Aluminum Extrusions with Coated Abrasives

ALUMINUM extrusions are widely used in the manufacture of metal doors, window frames and ornamental trim. These items are normally given a satin or anodized finish, which requires preparatory grinding, sanding, polishing, or buffing.

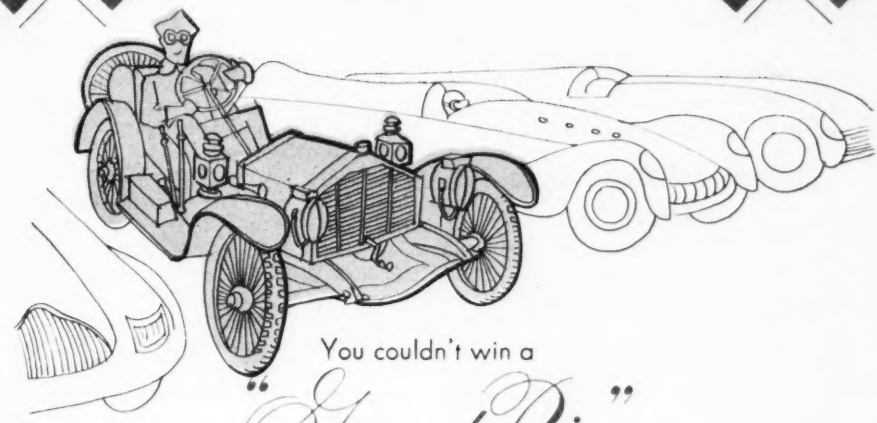
The operation can now be performed at substantial saving in production cost with the Curtis Straight-O-Matic Machine in conjunction with Carborundum's Abrasive Cloth Belts. This setup, shown in the accompanying photograph, accomplishes the polishing of extruded aluminum quite rapidly.

One pass with a 120-grit belt, at a feed speed of 10 to 15 ft. per min., has been found sufficient to remove surface imperfections or scratches from the extrusions. Surface finish requirements are dependent on whether or not the material is to be anodized. Experience shows that surfaces obtained with 120 to 400 grit are suitable for anodizing. Oil, greases or water may be used in the polishing operation.

If a one-pass operation is to be employed, a 40 to 50 durometer contact wheel is recommended, to conform with the bow or twist in the piece. If finer finishes are desired, a 70 durometer contact roll used for the initial coarse pass will size the stock as well as remove the necessary material and imperfections. The 40 to 50 durometer contact roll is used on the finish fine



Curtis Straight-o-Matic Machine in which aluminum extrusions are polished with abrasive belts.



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grit passes which are run at feed speeds of 30 to 40 ft. per min.

Steel Fittings Dried Quickly

A FAR-INFRARED electric heating installation has speeded up drying of metal parts for Unistrut Corporation, at Wayne, Michigan. Twelve Chromalox electric radiant heaters rated at 1.8 kilowatts each, focus far-infrared heat on parts as they leave the washing and phosphatizing tunnels.

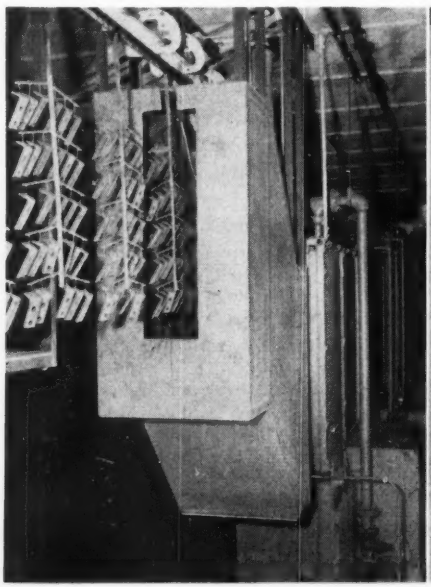
With a conveyor speed of six feet per minute, 3,000 pounds of brackets, angles, channels, clamps and similar parts are dried per hour. Insulation and reflective aluminum sheeting are used to retain heat in the oven.

An interesting angle of this installation is that many of the Unistrut components which are dried in this oven are sold nationwide for the fabrication of similar ovens. The escalator type oven used here is well suited for the job being done. It demonstrates the adaptability of the all-metal radiant heaters which are mounted at an oblique angle that assures even absorption of heat by the passing work.

Accurate heat regulation for varying part sizes is provided by variable input controllers and magnetic contactors. Controller settings can also be varied to compensate for changes in rinse temperature, ambient building temperature and humidity.

Other advantages of the installation are compactness of the oven which saves valuable floor space, all-metal construction and long life of heating elements. At full input controller setting the total load is only 21.6 kilowatts. The far-infrared energy produced by the radiant heaters is absorbed equally well by all colors, making heat adjustment easier and more accurate.

The Chromalox radiant heaters used in this installation are products of Edwin L. Wiegand Co., 7552 Thomas Blvd., Pittsburgh 8, Pa.



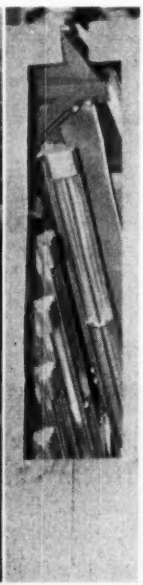


Fig. 1 (left)—Dried parts leave the far-infrared oven.
Fig. 2—View of oven showing radiant heater arrangement.

Obtain Brighter Color

with these new

MD NON-LEAFING ALUMINUM PIGMENTS

ADVANTAGES

- Brighter and More Brilliant Appearance
- Higher Contrast or "Flop"
- Greater Durability
- Greater Ease of Dispersion

Send for bulletin on these new MD NON-LEAFING ALUMINUM PASTES

Two new types of non-leafing aluminum pigments, MD 584 and MD 784, developed by the MD Laboratories, are now offered for use in protective and decorative coatings.

MD 584 NON-LEAFING ALUMINUM PASTE, Standard Lining Grade, is designed for improved appearance and workability in metallescent finishes for automotive and industrial use.

MD 784 NON-LEAFING ALUMINUM PASTE, Fine Lining Grade, has been created specifically for hammer finishes and metallic enamels.

Each of these pigments characterizes the features of uniform particle size distribution with the resultant bright, clean color effect and improved reflectance contrast, or "flop".

While each pigment was designed for specific applications, users have found instances where each pigment has been successfully used alternate to the recommendations.

MD METAL POWDERS METAL PIGMENTS METAL ABRASIVES

2413

METALS DISINTEGRATING COMPANY, INC.

Elizabeth B, New Jersey

Plants: Elizabeth, N. J., Manchester, N. H., Berkeley, Calif., Emeryville, Calif.

ORIGINATOR AND OLDEST PRODUCER OF ALUMINUM PASTE

Finishing Clinic

(For Finishing Problems)

Question. *We are interested in having information on the proper type of tumbling barrels used for enameling small items in bulk. Any information you can give us as to the suppliers of this equipment will be sincerely appreciated.* *I.D.*

Answer. In response to your letter we suggest that you contact the following manufacturers who can supply tumbling barrels of various kinds which may be used to do bulk enameling of small items. (Names of four companies furnished.)

Two of these companies (indicated) manufacture centrifugal machines for bulk enameling and plating. Another manufacturer of centrifugal driers who might furnish machines for bulk enameling is listed.

May we suggest that you enlist the aid of the technical service representatives of your paint and enamel suppliers in this project. As you can visualize, it will be essential for your paint supplier to tailor your paint for tumble or centrifugal application. He will need to keep in mind the characteristics which the final finish must have, and the conditions under which you desire to apply the coating in order to supply you with a satisfactory material.

——— *fc* ———

Question. *Can you recommend all or part of a cleaning and painting cycle which will most satisfactorily and economically accomplish the manufacturing problem outlined in the following description:*

I. General.

A. With a minimum of handling, transport finish machined castings through the necessary cleaning and painting cycles to most economically achieve the finish coating required by the product.

B. There are eight different aluminum permanent mold castings involved. Each is irregularly shaped and they vary in surface area from 20 to 450 square inches and in weight from 1 to 11 pounds.

C. Production requires 150 of each casting per day.

II. Cleaning.

A. The castings must be physically clean to provide good

adhesion and proper appearance of finish coat. Material to be cleaned is aluminum alloy permanent mold castings.

B. The "dirt" on the parts will consist mainly of water soluble oils, perhaps some grinding compound, and aluminum chips.

C. There is no available cleaning equipment on hand.

III. Finishing Requirements.

A. All castings will be same color (gray-blue).

B. Finish must be glossy, durable, and have good adhesion. Corrosion resistance is not a problem.

C. Drying period of the coating must be brief as possible with relatively low temperature required.

We wish to handle this job with a minimum investment in new equipment yet have the lowest cost per piece possible. Automatic equipment which will achieve a substantial labor saving is not considered an unreasonable investment.

Can you recommend the proper cleaning cycle and most applicable finish coating as well as additional equipment required to adequately solve this manufacturing problem? W.E.

Answer. The problem you pose, namely, that of specifying the proper cleaning and painting cycle for aluminum permanent mold castings, is one which will require a thorough engineering study. This is particularly true in view of the fact that you wish to have a minimum investment in new equipment yet achieve the lowest cost per piece possible.

Generally, from the description of the parts it appears that they could be cleaned adequately in a mechanical washer with a chain mesh conveyor belt. I believe you will find it worthwhile to use a surface conversion coating, either of the phosphate or the chromate type. You may wish to apply this conversion coating by means of additional cycles on the mechanical washer, or you may wish to do it as a series of separate operations following the mechanical washing operation. Equipment cost considerations versus process time will enable you to arrive at the proper decision.

You may wish to apply either an air dry lacquer finish or a baking type finish, using the hot spray method of application so that one finish coat will be sufficient. The shape and design of the castings will determine whether or not this finish should be applied by hot spray or by dipping.

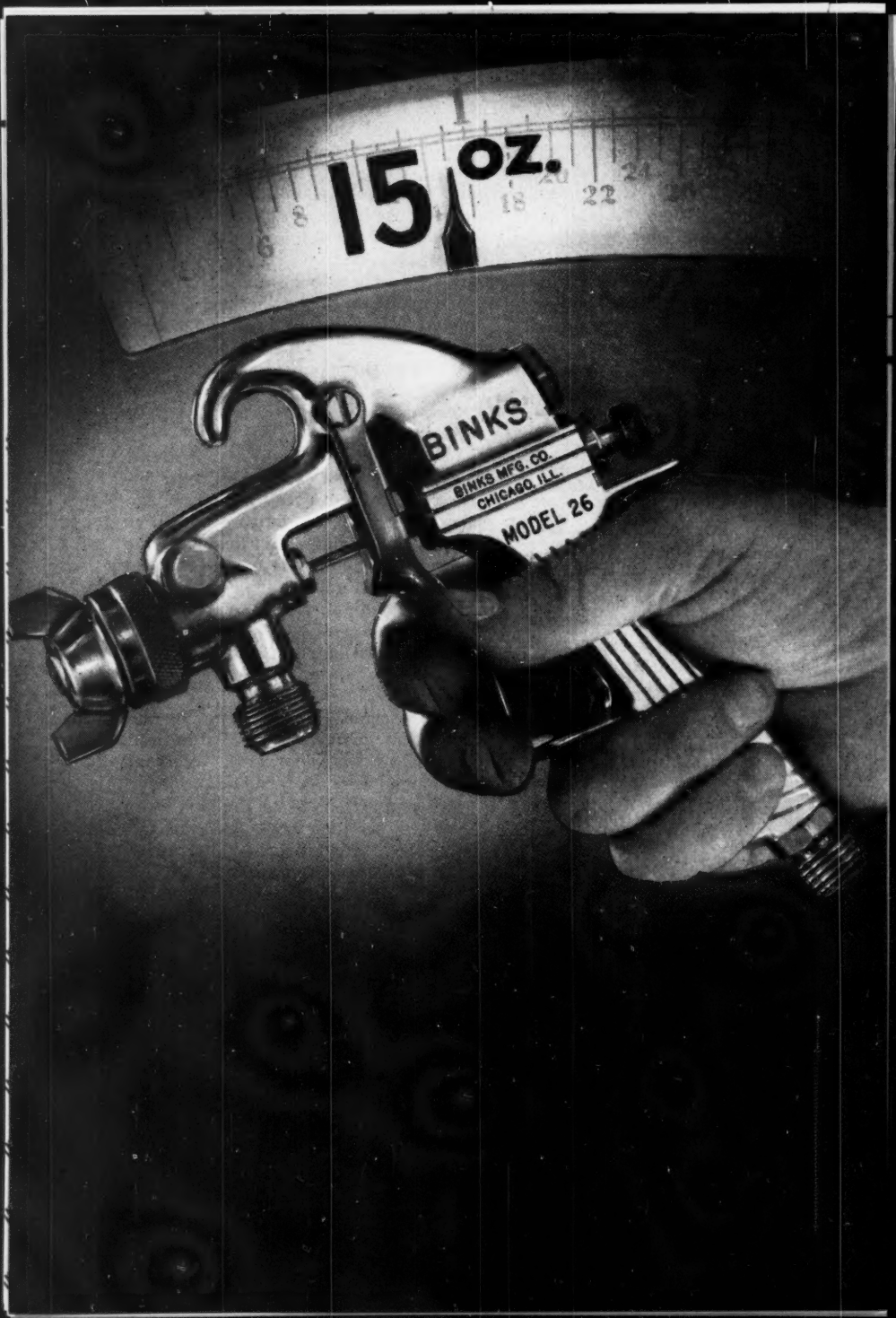
Companies which can advise you in detail concerning cleaning and surface preparation equipment are: (names furnished).

For information regarding surface conversion materials for aluminum castings, you may contact the following companies: (names furnished).

For suggestions as to the best paint finish to use on these products, we should like to refer you to the following companies: (names furnished).

Utility costs in the area in which this installation is to be made will help in determining the proper baking method. Manufacturers of infra-red ovens, as well as gas and oil fired ovens, which you might like to consult on this matter are as follows: (names furnished).

In the event that your study indicates that it is desirable to apply the finish coating by hot spray you may be interested in contacting the following companies who manufacture paint heating and spray finishing equipment. (Names furnished.)


15 oz.
BINKS
BINKS MFG. CO.
CHICAGO, ILL.
MODEL 26

New paint spray gun weighs only 15 ounces

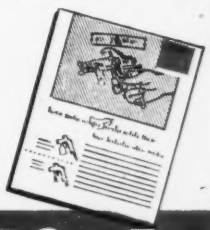
BINKS MODEL 26 IDEAL FOR LIGHT PRODUCTION SPRAYING —AND FOR WOMEN OPERATORS

Binks Model 26 Spray Gun is especially designed for applications where the gun must produce high-quality finishes, yet be extremely light in weight. It is ideal for stenciling, blending, touching-up products coming off assembly lines and where women operators are doing light production spraying.

This featherweight gun increases efficiency by reducing operator fatigue. It saves money by supplying quality features normally found only in more costly guns. For example, it has a brass and steel fluid passage to protect the gun body from the corrosive attack of certain paints and fluids.

Model 26 can be used to spray lacquers, synthetic enamels, paints and other finishes and coatings of light or medium viscosity. Send coupon TODAY for details, including prices.

Send for Bulletin 26! This bulletin tells how the featherweight Model 26 Spray Gun saves you time and money. Facts backing each claim thoroughly illustrated. And here you'll find complete specifications with prices included. See your Binks industrial distributor for a copy or send in coupon.



MAIL COUPON today for Bulletin 26

Binks Manufacturing Company
3118-40 Carroll Ave., Chicago 12, Ill.

Gentlemen: Please rush my FREE copy of your Bulletin 26 describing your new featherweight Model 26 Spray Painting Gun

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EVERYTHING FOR SPRAY PAINTING

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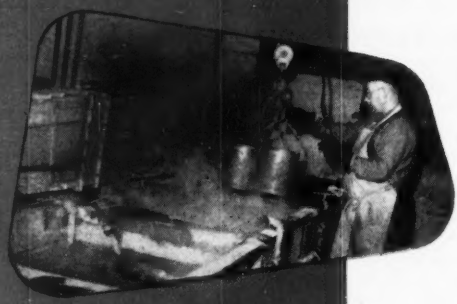
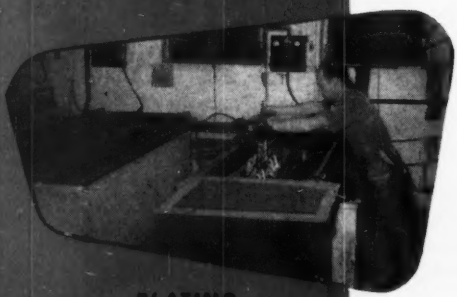
POLISHING



CLEANING



PLATING

FINISHING

New • EQUIPMENT • MATERIALS • PROCESSES

Water-Reducible Enamel

A water-reducible industrial enamel that "refuses to burn" at normal operating temperatures has been announced by the General Industrial Division of The Sherwin-Williams Co., Cleveland 1, Ohio.

Designed for application on metals, finish is an emulsion type enamel in which water is employed both as an ingredient and a reducing agent. Its qualities meet the requirements of the automotive, electrical and many other metal-working industries.

Although it is water-reducible in the application process, it is not water soluble after application and its oil resistance is excellent. Its glossy finish is very hard, with high impact resistance. In performance it compares with any of the existing finishes for industrial metal products.

The finishing material in the liquid state at normal room or operating temperatures will not ignite. After application and drying, the finish becomes combustible but in a limited degree.

At the present time the finish is produced only in black, but it can be made in a range of colors.

Qualities cited for the new emulsion enamel include these: it is non flammable at normal room or operating temperature, even if exposed to flame; it is formulated either for dip or spray application; its hardness, impact resistance, adhesion properties and resistance to oil film are excellent; it provides an attractive, high gloss finish;

industrial units already coated with the enamel can be machined or fabricated without damage to the finish or to cutting tools.

After application the enamel is air dried for 20 minutes, then baked for approximately 18 minutes at about 300 deg. Fahrenheit.

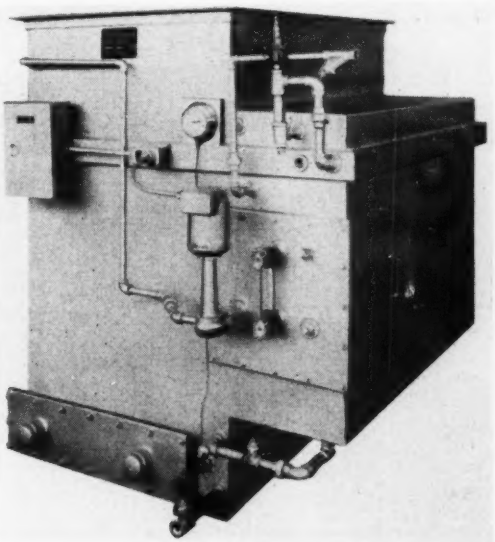
Vapor Degreaser

Manufacturer: Metalwash Machinery Corp., 915 North Ave., Elizabeth 4, N. J.

Features of the Metalwash Improved Design Vapor Degreaser include obstruction free tank walls, recessed condensing coils, removable pump chamber and water separator manufactured from stainless steel, one end maintenance and demand type control of water for the condensing system.

The recessed multi - tiered condensing coil extends the full length of the degreaser and is designed to provide the same efficient vapor control formerly obtained with a coil installed completely around the tank interior. The water separator and pump compartment fabricated from stainless steel and welded to a flanged plate, may be removed for periodic inspection of the storage tank interior. This Metalwash design makes possible the conversion to a vapor spray degreaser. All service connections and clean out openings are located in one end of the tank, making for simpler maintenance.

The automatic water temperature regulator is so installed that maximum cooling water is required only at times of maximum heat input. When work is being cleaned, less cooling water is re-



Metalwash Improved Design Vapor Spray Degreaser

quired by reason of the cooling effect of the parts placed in the degreaser. This regulation reduces water consumption and controls the temperature of the water in the coil as well as in the jacket, eliminating unnecessarily low temperatures and atmospheric moisture condensation.

Surface Finishing Machine

A surface finishing machine for performing necking operations on spoons, shouldering operations on knife blade bolsters and similar applications has been developed by Clair Manufacturing Company, 1010 S. Union St., Olean, N. Y.

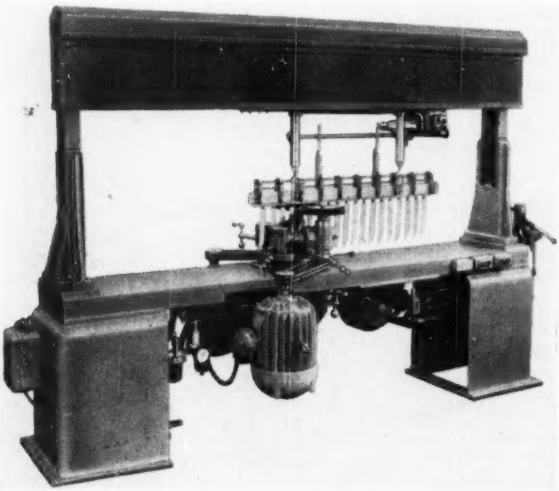
Construction of this unit—the Clair Model 207 Shouldering Machine—permits loaded 38-inch work racks to be transferred from other Clair surface finishing machines for the application of a 90 degree angle cross buff. This provides coverage on both sides of the spoon or knife in many radii and angles impossible of access with conventional glazing and polishing equipment.

The Shouldering Machine incorporates identical interchangeable wearing parts common to all Clair Surface Finishing Machines. Two 3-hp, 1800 rpm, totally enclosed dust-proof motors provide buff speeds up to 3600 rpm. The horizontal stroke of the work racks, through and clear of the buffs is adjustable from 0 to 44 inches. An independent lever adjustment permits either of the two buffs to be lowered or raised through a 1-inch range.

Uniform floating contact between the buffs and the work at any predetermined setting of an automatic pressure regulator is provided by a roll pressure control air cylinder. This unit also actuates the buff arbors from the open to closed position. To compensate for either off-center work or a difference between the diameters of the buffs being used, a hand crank can be used to move the center line of contact between buffs either right or left. Independent hand crank adjustments permit individual tilting of buff arbors through 12½ degree arcs to permit buffs to contact work at any angle falling within that range.

Among other features are anti-friction bearings throughout, independent adjustable speed control valves in all circuits, and an emergency safety control which instantaneously actuates buffs to open position clear of work and work racks.

A variety of optional equipment also can be supplied, including an assembly to provide vertical oscillation of work



Clair Model 207 Shouldering Machine

OPPORTUNITY FOR PROFITS in *your* plant operations

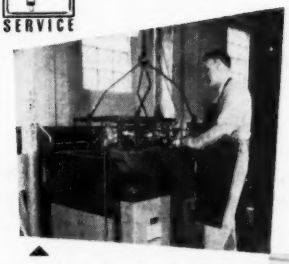
ENGINEERED SERVICE

Here's how Phillips Degreasers help manufacturers turn cleaning operations into real profits . . .

Realizing that more metal parts can be cleaned in less time with Phillips vapor degreasers, manufacturers have cut costs and increased profits in their plant operations.

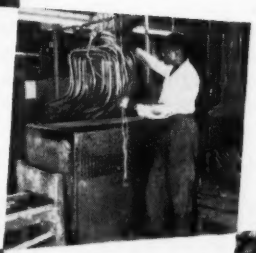
Every man-hour saved in cleaning cuts costs just as well as hours saved in machining, finishing, stamping or any other operation. And with Phillips' modern, all-electric degreasing method, your cleaning costs can be cut as much as 50%.

Here is a real opportunity for new profits due to less costly cleaning. Investigate now. There's a Phillips man in your area. Check with him today or write.



Skil Corporation reports better cleaning of parts plus 3 to 4 times faster cleaning with their Phillips Degreaser.

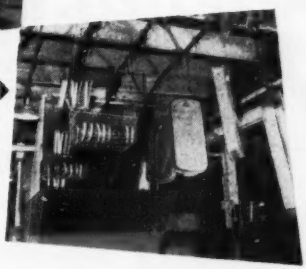
PHILLIPS
VAPOR DEGREASERS



Arrow Plating Co., Inc., makes use of a Phillips unit to get fast degreasing of tubular metal parts for furniture.

Bettcher Manufacturing Co., uses a Phillips Degreaser to clean large heater parts for better results at greatly reduced costs.

Steger Products Manufacturing Co., also uses a Phillips monorail conveyor type unit built right into their production lines, saving as much as 50 man-hours per day.



PHILLSOLV

. . . the one degreasing solvent that gives you more thorough cleaning . . . of more parts per gallon . . . at less cost.

SEND FOR YOUR COPIES OF THESE HELPFUL BULLETINS

Phillips Vapor Degreasers; Phillsolv Bulletin; and the informative Vapor Degreasing Handbook.

Phillips MANUFACTURING COMPANY
3457 TOUHY AVENUE • CHICAGO 45, ILLINOIS
ENGINEERED METAL CLEANING EQUIPMENT

BATCH TYPE DEGREASERS | COMBINATION DEGREASERS | "ROTOMATIC" DEGREASERS | CONVEYOR TYPE DEGREASERS | "TORRENT" WASHERS

rack, cleansing jets, dust collector guards and v-belt safety guards.

Durachem Clear Baking Finish

A synthetic baking type finish introduced by Maas & Waldstein Co., 2130 McCarter Highway, Newark 4, New Jersey, Chicago and Los Angeles, manufacturer of industrial finishes, offers a unique combination of exceptional clarity and high chemical resistance. It is specifically formulated to provide a high degree of surface protection for silver, brass, nickel and other metals, without detracting from their natural color and luster.

In addition to its high chemical stability, the new finish, known as Durachem, is non-yellowing even after prolonged exposure to sunlight or high temperatures. It also has good resistance to the effects of salt spray and perspiration.

Typical applications include builders' hardware, lipstick shells, vanity and cosmetic cases, pen caps and other metal parts. Where decorative effects are desired, finishes with the same high chemical resistance of clear Durachem can also be supplied in a range of colors.

Technical information and test samples of Durachem are available on request from Maas & Waldstein Co.

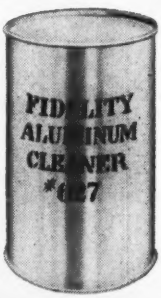
Automatic Plating Machine

Manufacturer: Wagner Brothers, Inc., 432 Midland Ave., Detroit 3, Mich.

The Wagner fully automatic, vertical transfer, return type plating machine is a complete plating unit consisting of a base, the necessary processing tanks,

Fidelity ENGINEERED COMPOUNDS

FIDELITY
ALUMINUM CLEANER No. 627



Fidelity Aluminum Cleaner No. 627 is unexcelled for cleaning aluminum, aluminum alloys and other metals. It is a mixture of mild alkalis and special wetting agents . . . expertly blended to do a superior cleaning job.

Write, detailing your metal cleaning problems. Our Laboratory Staff will be glad to make recommendations . . . no obligation, of course!

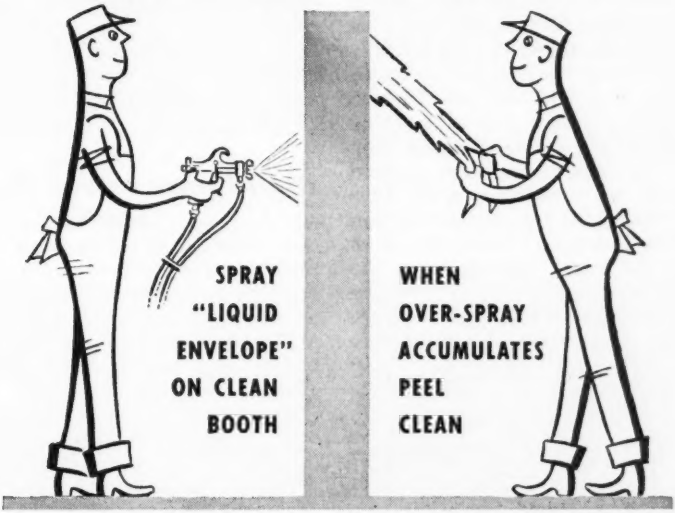
for
METAL FINISHING & PLATING

SPECIALISTS IN METAL CLEANERS AND PAINT STRIPPERS
FIDELITY CHEMICAL PRODUCTS CORP.
470 Frelinghuysen Avenue, Newark 5, New Jersey

easy way to keep booths clean

"LIQUID ENVELOPE"

STRIPPABLE PROTECTIVE PLASTIC FILM



That's all there is to the simple, labor-saving, inexpensive "Liquid Envelope" way to keep booths firesafe, better illuminated, better ventilated. Costs far less than the outmoded hand-scraping or grease-papering methods. ***New Users:*** Order a 5 gallon Test-Sample at the drum-lot price. Hundreds of steady users found out that way. Why not you?

BETTER FINISHES AND COATINGS, INC.

268 Doremus Avenue, Newark 5, N. J. • 122 East 7th St., Los Angeles 14, Calif.

DISTRIBUTED BY

Abrasive & Supply Co., Detroit, Mich.
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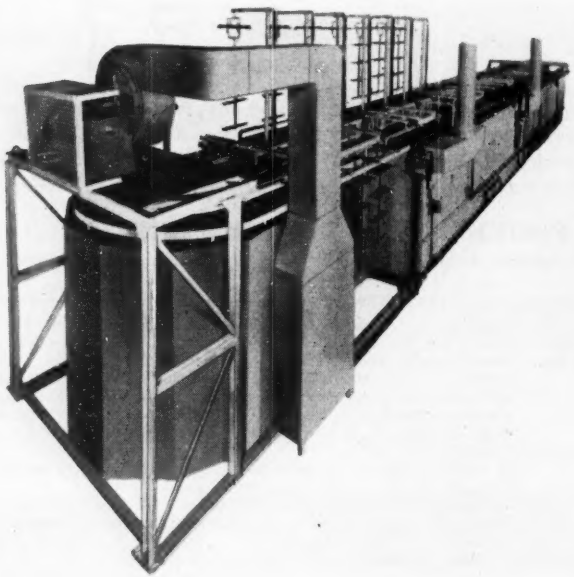
Tanner and Co., Indianapolis, Ind.
Tri-State Spray Equipment & Compressor Co.,
Omaha, Neb.; Rock Island, Ill.
In Europe:
Jenson & Nicholson, Ltd., London, Eng.

conveying and transfer mechanism, work carriers, anode and cathode bars, hydraulic equipment, and controls.

The machine transfers and conveys plating racks through the cycle with two reciprocating movements, longitudinally and vertically. All working parts are mounted on a central carriage which moves on a single track and is actuated by a hydraulic cylinder. This supplies the horizontal motion to carry the work through the cleaning and plating tanks and drying oven, all of which surround the carriage. A shaft running the length of the carriage near its top is fitted with gears which are meshed to racks on the work lifting arms. This assembly provides the vertical motion which lifts and lowers the work out of and into the tanks. Movement of the lifting arms is synchronized with the horizontal movement of the carriage. Basic power is supplied by a single electric motor and hydraulic pump which, with the control panel, can be located at any convenient point. Electric current for cleaning and plating operations may be supplied from the usual power sources.

Advantages claimed for the Wagner plating machine are: smooth movement, low ceiling height requirement, double contact of work carriers with electrified rails, lower conveying power requirement, shortest possible multiple station tanks, all mechanism accessible for maintenance, simple controls, easy installation.

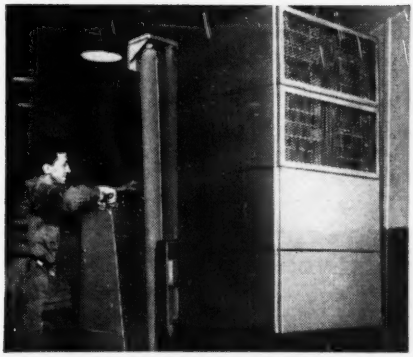


Wagner Automatic Plating Machine

High Temperature Masking Tape

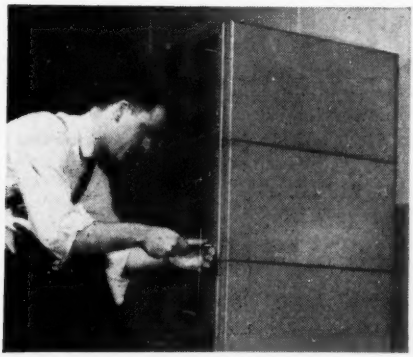
A pressure-sensitive tape for the metal finishing industry—for high heat masking use by aircraft and electronic manufacturers on such treated metals as anodized aluminum, pickled steel, and dichromated magnesium—has been announced by Minnesota Mining and Manufacturing Co., St. Paul.

The tape, "Scotch" brand high temperature masking tape No. 214, is designed for masking use in oven temperatures up to 325 deg. F., and is capable of withstanding much longer bake cycles than previously possible. Tests show that the tape can be used in oven cycles at 375 deg. F., and at room temperatures as well.

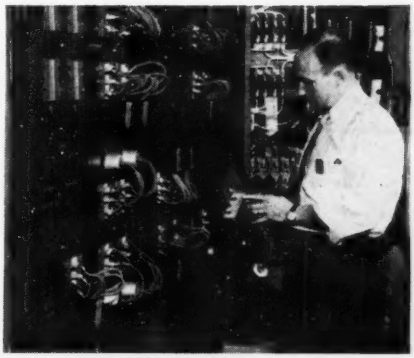


Three Ways You Save With G-E Plating Power Supplies

1 SAVE ON INSTALLATION COSTS with G-E Plating Power Supplies. No special foundations are required. Simply move rectifier unit into place with a fork truck, make connections, and it's ready to operate.



2 SAVE ON MAINTENANCE COSTS. A cooling fan, requiring occasional lubrication, is the only moving part. All parts are corrosion resistant. Cooling design minimizes intake of dirt, dust and corrosive fumes.



3 SAVE ON EQUIPMENT LIFE. At rated output G-E copper-oxide rectifier stacks last almost indefinitely. On test stands G-E selenium rectifier stacks have maintained rated output for over 60,000 hours.

General Electric Plating Power Supplies are available for laboratory plating, barrel plating, and with manual or automatic regulation. For more information contact your nearest G-E Plating Rectifier agent or G-E Apparatus Sales Office, or write Section 464-13E, General Electric Company, Schenectady 5, New York.

GENERAL ELECTRIC

In addition, tape No. 214 has the ability to remove cleanly from anodized aluminum and other treated metal surfaces without leaving adhesive deposit.

Actane 33

Enthone, Inc., Dept. MOS, 442 Elm Street, New Haven, Conn., has announced a powdered product called "Actane 33" which, in many cases, can be used to replace hydrofluoric acid. Because of the powdered nature of the product, there are fewer hazards in handling it than is the case with liquid hydrofluoric acid.

Actane 33 has many uses. It can be used in combination with sulfuric acid to remove silica, sand and scale from steel. It can be used with nitric acid and ferric sulfate for pickling of stainless steel. It is used with sulfuric acid for etching of aluminum and with nitric acid to produce mixtures that remove silicon and copper from aluminum to produce white clean surfaces. Actane 33 is recommended for use in acid pickles in plating cycles to remove siliceous films. Another use for Actane 33 is in pickling of titanium.

The product contains soluble fluorides and penetrating and dispersing agents.

Descriptive literature available.

Platecoil Selector Chart

An automatic sliding selector chart has been developed by the Platecoil Division of Tranter Manufacturing, Inc., Lansing 4, Mich., to aid in calculating the number and type of Platecoils required in a tank installation.

Now used in many industries as a replacement for pipecoils, Platecoil is essentially two sheets of metal, embossed to form channels for the passage of the heating or cooling liquid, and joined by resistance welding.

By knowing the size of the tank in

DANIELS
#4 OLS
in unloading position
PLATE SMALL PARTS
with the DANIELS OLS
For plating die castings, stampings, screw machine parts, castings or any small parts in bulk, this Daniels OLS Oblique Plating Barrel is unsurpassed.
Write for complete details today
DANIELS PLATING BARREL & SUPPLY CO.
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can *rely* on
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Lacquers • Enamels • Dopes • Thinners
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Specialized Production Finishes
Aircraft Finishes
RANDOLPH
PRODUCTS CO.
CARLSTADT, NEW JERSEY

Wonder chemical

CHANGES METAL SURFACES, MAKES PAINTED PRODUCTS *look better longer*

NOT ALL "wonder chemicals" are new! Here's one that for more than a score of years has been doing a job that manufacturers at first said couldn't be done.

In as little as sixty seconds, Bonderite changes the surface of metal parts to a *nonmetallic* layer of unusual properties. Bonderite is used on automobile bodies, refrigerator cabinets, transformers, hardware, and metal furniture, to name a few items out of thousands.

This nonmetallic coating does several amazing things. Because it has an affinity for organic coatings and is integral with the metal, it takes and holds paint securely, preventing chipping and peeling. It acts to keep moisture from reaching the metal, thus controlling rust and corrosion. And should the paint film be damaged by accidental scratch or dent, Bonderite prevents the spread of finish failure.

All of these benefits combine to mean lasting fine appearance for those thousands of products whose manufacturers use Bonderite before painting.

Unlike many "wonder chemicals," Bonderite requires no special handling. It produces excellent results in large and small installations, in spray and immersion applications, and on steel, aluminum, zinc, or cadmium and their alloys.

The cost of Bonderite is small—a fraction of a cent per square foot of area treated—and the benefits are great.

Your inquiry will get prompt, expert, helpful attention.

*Bonderite, Bonderlube, Parco, Parco Lubrite — Reg. U.S. Pat. Off.

Parker

RUST PROOF COMPANY

2172 East Milwaukee, Detroit 11, Michigan

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces

Platecoil Selector Chart

gallons or cubic feet, and the heating requirements, the Tranter field representative, using the new chart, can quickly determine the number of heat units and square feet of Platecoil necessary to do the job.

Plextone

Plextone, the color-flecked finish produced by Maas & Waldstein Co., is an enamel that combines warmth of texture, richness of multicolor, and durability in one spray application from one gun in one coat that completely covers surface flaws and blemishes.

The product is being used to finish displays and racks, kitchen cabinets, machinery, office panels and partitions, furniture, store fixtures, switch gear housings, table lamps, caskets and burial vaults, toys, TV cabinets.

On most surfaces, one prime coat and one Plextone coat are required. Plextone's textured finish hides metal spot welds, flaws and blemishes, and cuts material waste. Less costly base materials may be used; no special spray adaptation is necessary since Plextone uses ordinary spray equipment.

Tests of durability on the Plextone finish have shown that it is highly resistant to chipping, cracking and abrasion; it is not affected by alcohol, grease, oil, and chemicals.

Plextone has a lacquer base and air dries in about 30 minutes. It is normally hard enough to handle in two to three hours. It comes ready to use in multicolors or in solid colors. Flat or semi-gloss sheens may be had, or there are combinations giving glossy highlights on flat backgrounds.

A wide variety of standard pre-mixed colors are available; in addition, a custom combination can be prepared for a manufacturer's "color signature" on his product. Color chips and technical literature are available on request from Maas & Waldstein Co., 2119 McCarter Highway, Newark 4, New Jersey.

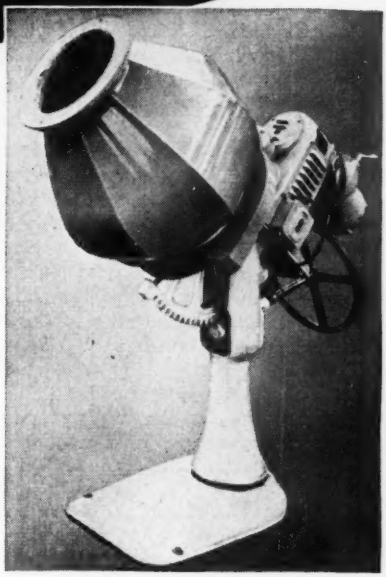
Quick-Detachable Air Connection

A compact, quick-detachable air connection, said to provide almost complete free flow of air to air-powered tools, has been announced by the Binks Manufacturing Co. of Chicago. Binks claims that this Q-D Connection, which is recommended for the air hose coupling on paint spray guns and other air-operated equipment, slashes pressure drop at the connection to 5 per cent.

Other advantages claimed by the manufacturer for this Q-D connection include full 360-degree swivel action.

The new Binks Q-D Air Connection quickly snaps on or off a spray gun or other air operated tool with a simple push or pull action. There is no air leakage. Automatic air shut-off assures no loss of air when making or breaking the connection.

DEBURRS 400% FASTER



SAVES 40 MANHOURS PER WEEK
with

New FLASK-TYPE GLOBE *TILTING TUMBLING* BARREL

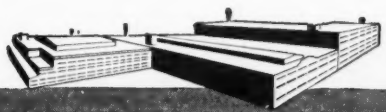
Former deburring of small precision electrical parts could be done by hand at a rate of only 40-50 pieces per hour, requiring a week for one run. One Globe Flask Type Barrel now handles the entire run of 2,500 pieces in one hour . . . a savings of 30% labor in the department. Tolerances held to .001 and .0005". These Globe Flask-Type Barrels handle steel, brass, aluminum and plastic parts with the same high output and quality finish.

Globe's new flask shell gives bigger pay-load capacity with tilting barrel control. It holds more, works faster with controlled agitation for uniform high quality parts. Low speeds for non ferrous and plastic materials.

FREE EXPERIMENTAL SERVICE

Hupp's experimental finishing laboratory will show you how to cut finishing costs. Just send samples of parts to be processed with a finished part. There's no cost or obligation.

Write Dept. F Today!



HUPP CORPORATION

GLOBE STAMPING DIVISION

1250 WEST 76th STREET • CLEVELAND 2, OHIO

STAYING INDUSTRY SINCE 1902

No longer must the operator twist the air hose, which is difficult when the hose is under pressure. The spray gun or other tool can be rotated on the base to bring it into position.

Once a spray gun, or other equipment, is fitted with this connection, an operator cannot strip or cross thread connections while attaching the air hose. One short push and the connection clicks tightly into place. Air tool and airline instantly become a leak-tight unit. The device is considered particularly useful when quick color changes are made by changing guns.

The connection has only two main elements—one of which threads onto the air inlet of the spray gun (or other tool). The other element attaches to the air hose and consists of a sleeve with a sliding collar.

The connection is broken by a slight downward pull on the sliding collar. Tugging or twisting is unnecessary.

The Binks Q-D Swivel Connection is made for standard air hose sizes with standard pipe threads. They fit all Binks Accessories, spray guns and painting equipment.

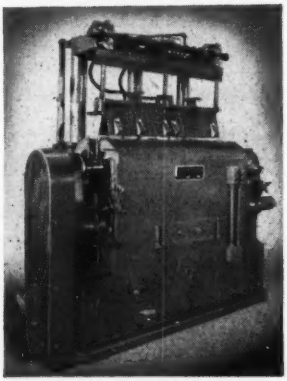
For free copy of Bulletin Q-D, describing the connection in detail, write to Binks Manufacturing Co., 3122 Carroll Ave., Chicago 12, Ill.

Esbec Bench Twin Tumbling Barrel

The Esbec Bench Twin Tumbling Barrel, manufactured by Tumbling Sales & Service Co., King St., Greenwich, Conn., is available in three sizes, with a choice of four sizes of drums. Built for abrasive tumbling or ball burnishing, extra heavy construction is used throughout. Single speed machines are offered with 15, 20, or 30 rpm. drum

CENTRAL POLISHING MACHINES

Double Roll, Vertical Type — 18" and 36" Stroke



Central Vertical Polishing Machine with 18" stroke. Also available with 36" stroke and Horizontal Machines with 7 to 21 foot stroke.

. . . for high production
. . . for fine finishes

For polishing a wide variety of shapes, contours and flats. Fast, economical, simple to operate. Hydraulically operated and controlled. Women operate them.

Our Patented Hydraulic Contour Device gives a high finish to many difficult shapes. Stroke is adjustable by stepless increments from 2 inches to full stroke. Work may be oscillated across face of rolls, at the turn of a valve, for high finish and even roll wear.

Machines are used on cutlery, spatulas, putty knives, hand mirrors, auto trim, flat irons, hardware, machetes, wrenches, chisels and many other parts.

Central Polishing Machines may be set in batteries with conveyor feed system when a sequence of polishing operations is required. Conveyor and magnetic chucks can be furnished.

Full information on request.

CENTRAL MACHINE WORKS

72 COMMERCIAL ST., WORCESTER, MASS., U.S.A.

KIRK and BLUM OVENS

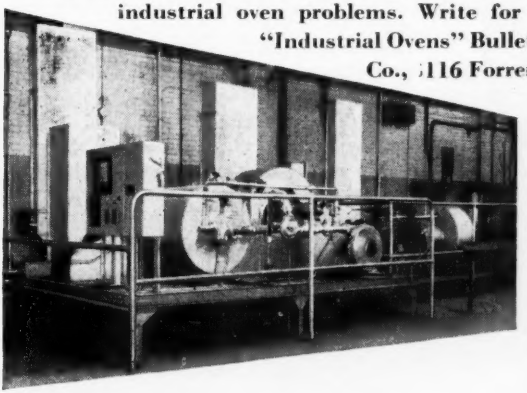
"...put the heat on production problems"

at ALLIS-CHALMERS Mfg. Co.
NORWOOD, OHIO WORKS

20-ton capacity rotor and stator varnish baking oven. Installed in a pit, this 300° F. oven is ten feet deep by fifteen feet long and twelve feet wide. It is loaded by shop crane.

Many Kirk & Blum Industrial Ovens are designed, fabricated and installed for specific production problems. Shown here are a few of the variety of K & B ovens which are used in electric motor manufacture at Allis-Chalmers Mfg. Company, Norwood, Ohio.

Put the 46 years of experience and skill of Kirk & Blum to work on your industrial oven problems. Write for complete information and "Industrial Ovens" Bulletin to The Kirk & Blum Mfg. Co., 3116 Forrer Street, Cincinnati 9, Ohio.



Heating systems for two batch type varnish baking ovens are located outside of the varnish dipping department to minimize hazards.

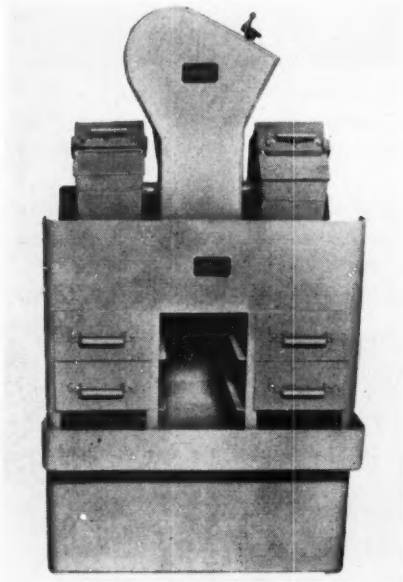
KIRK AND BLUM
INDUSTRIAL OVENS

speeds; lower or higher speeds are available on special order. Three speed machines are equipped with 3-step pulleys and can be supplied with 13, 22 and 38 rpm., or 16, 27 and 47 rpm. Variable speed machines equipped with Lovejoy Drives can be supplied with almost any combination of speeds based on a ratio of 2.75 to 1.

The Esbec Bench Twin Tumbling Barrel is stated to be ideal for high production tumbling of all types of small pieces, from electronic parts and surgical needles to washers, and screw machine products.

A self-contained, watertight tumbling bench is available for use with the Esbec Twin. This unit provides built-in separating drawers and a water outlet which can be hooked up to any drain. It can also be used with the Esbec Model B Universal Bench Barrel.

Used with either of these units, it forms a complete tumbling department, with facilities for tumbling, separation of parts and media, and automatic disposal of water, together with storage of separating screens, abrasives, compounds, tools and other items used in the process.



Esbec Bench Twin Tumbling Barrel

Hard-Coating Process for Aluminum

A process for the hard-coating of aluminum, now in use by Anodic, Inc., Salt Street, Bridgeport 5, Conn., makes possible the application of this light-weight, readily-available metal to many types of equipment and parts. The hardened surface, generally 0.002 inch thick, which approximates case-hardened steel or chromium plating, has a very high resistance to abrasion and corrosion, a high dielectric strength, and a low coefficient of friction. In tests still in progress, hard-coated aluminum parts formed from the same dies used for similar steel parts, have outworn their steel equivalents 3.5 to one and have not yet shown signs of fatigue.

Anodic, Inc. is operating under the first commercial license issued by the Aluminum Company of America for the MHC (Martin Hard-Coating) Process, and is devoting its entire facilities to this work. The great interest to date is among manufacturers of office machines, textile machines, gages, gears, valves, hydraulic pistons and cylinders, guide rods, plates, and materials subject to corrosion.

In addition to great surface hardness, the MHC coating creates also a high dielectric strength, indicating potential value to electrical and electronic equipment. The coating serves as an excellent bearing surface requiring little, if any, lubrication, and rapidly dissipates heat. The excellence of its corrosion re-

the jet-black metal finish that's done with one bath!

LASTS LONGER! The Houghto-Black finish is tough—long-lived—yet so thin it won't alter dimensions of close-tolerance parts!

PROTECTS BETTER! Houghto-Black colors metals uniformly—even steels of different analyses finished at different times! Gives them a handsome jet-black finish.

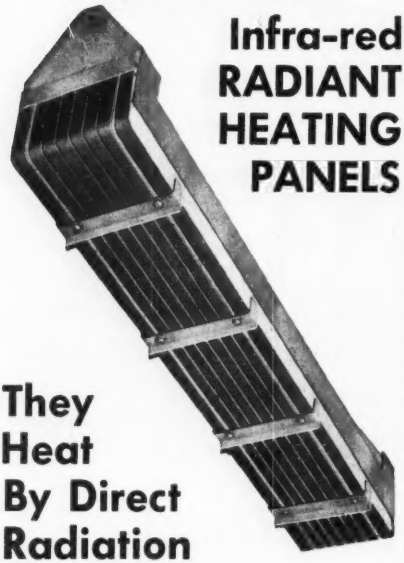
COSTS FAR LESS! Houghto-Black is a simple one-bath treatment. Inexpensive tanks and controls are used for dipping parts. And it's applied to mass production with a minimum of costly equipment! Write for folder.

HOUGHTO-BLACK
... a product of

E. F. HOUGHTON & CO.
PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

Ready to give you on-the-job service . . .

SYNTRON



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RADIANT
HEATING
PANELS

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By Direct
Radiation

Syntron Heating Panels cut production time and costs on any baking, heating, or drying process — because they heat by direct radiation—not by reflection. Compact, sturdy, and completely safe for use as individual panel heaters or fabricated into large ovens which require no expensive reflectors or other attachments.

Thin, strip type element design insures a flat, uniform, continuous heating pattern.

Write today for free Catalogue

SYNTRON COMPANY
452 Lexington Ave. Homer City, Pa.

sistance is indicated by its ability to withstand 5000 hours of the standard salt-spray test as compared with the 250-hour anodic finish requirement.

The MHC Process employed by Anodic, Inc. is a special anodic treatment that creates an amorphous coat of aluminum oxide about ten times thicker and 30 to 100 per cent harder than other anodizing processes; it can be classified as "file-hard." The coating grows equally above and below the original surface, so that the normal 0.002 inch coating increases thickness 0.001 inch on the surface or 0.002 inch on the diameter, and the build-up is consistent on both the surface and undercut areas. The exact growth can be controlled within very close tolerances.

Most alloys of aluminum are suitable for the MHC Process. In general, it is best applied to those containing less than 5 per cent copper or 8 per cent silicon. The coating can be applied selectively to limited portions of the surface, or to the entire surface. Its color is determined by the alloy, ranging between amber and black. A rough surface will be made smoother, while a very smooth surface will be slightly roughened. When used to salvage parts that have been over-machined, the coating can be built up to 0.008 inch in thickness.

Bright Copper Process

A bright copper process that increases plating production up to 60 per cent has been developed by Smoothex, Inc., Cleveland, Ohio, according to Lloyd Portzer, president of the firm.

Many desirable characteristics are contained in this new process. It is faster, easier to control, economical and readily adaptable for both large scale and average job shop production.

The process eliminates the operation of copper buffing. Instant sparkling

FOR THE FINISH YOU LOVE TO SEE

SPEEDIE Buffing and Polishing Compositions are designed for all types of buffing—and coloring on all metals, plastics and wood. There's a *SPEEDIE* Compound for heavy cut, light buffing or coloring to a mirror finish. These compounds have been proved both in the laboratory and on the job to do the most meticulous buffing operation.

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CLEANING IS NO PROBLEM WITH:

SPEEDIE Tripoli—Stainless Steel —Chrome—Nickel Finish—Grease Stick or Emery Cake Compositions. We have the *right* material for the *right* job . . . Write us on *your company letterhead* about objects to be buffed, type of buff used, problem you may now be having and how many bars of *SPEEDIE* Compound you will require for an experimental run. All such requests are given immediate attention.

WRITE TODAY—You'll be gratified at the results with *SPEEDIE* Buffing Compounds.

Photo by Underwood & Underwood

Bp

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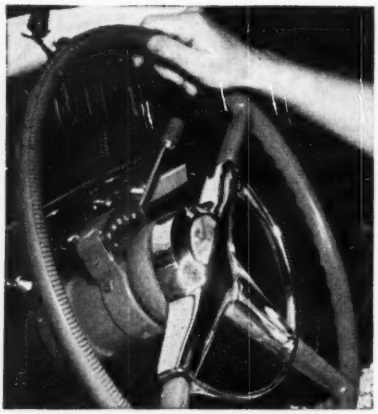


Horn ring mounted on steering wheel on which Smoothex Bright Copper Process was used.

brilliance that occurs at the beginning of the plating cycle in a Rochelle cyanide solution is noticed immediately. It has exceptional speed of deposition and excellent throwing power. Brightness is achieved over a range from 0 to 80 asf. Ductile deposits and low copper concentrations are featured in this process. Periodic reverse or intermitting current may also be applied.

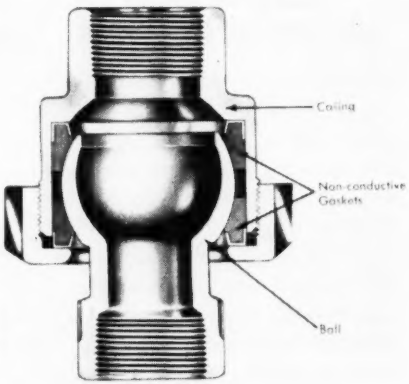
Insulating Joints for Piping to Electroplating Tanks

Insulating joints for pipe lines to electrolytic plating, cleaning and anodizing tanks used by metal working industries are manufactured by Barco Manufacturing Co., Barrington, Ill.

This is a development pioneered by Barco for providing an electrical insulating barrier in a pipe without interfering with its capacity or efficiency for conveying steam, water, chemicals, or gases. Besides promoting safety and preventing wasteful leakage of current, the joints are useful in preventing pitting or corrosion due to electrolysis, as well as metal deposition on tanks due to short circuits.

As shown in the accompanying illustration, the Barco Insulating Joint consists of a simple threaded malleable iron ball end supported between two non-conductive, O-type molded gaskets housed in a threaded malleable iron casing. Flow is straight through. In a dry conditions these joints have a resistance of approximately 100,000,000 ohms. When used with water, resistance through the connection depends on the pH of the water. For a single joint, used with steam, 50-60 volts is recommended as a safe maximum. For higher voltages, two or more joints can be series connected.

These joints are available for pipe sizes ranging from ¼ to 6 inches in

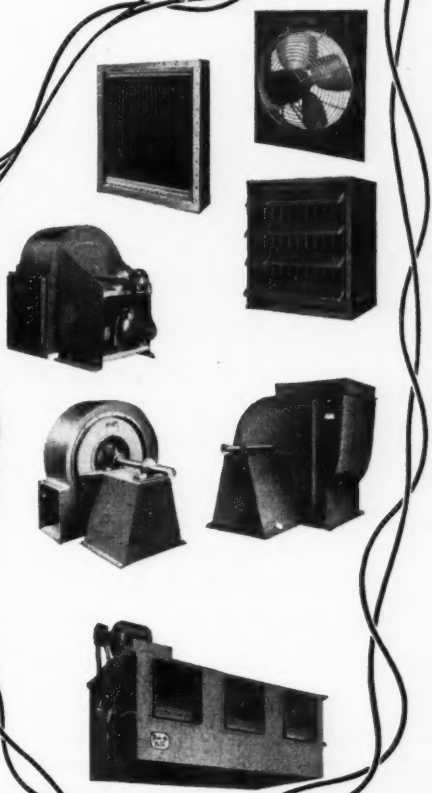


A cross-section view of a Barco Insulating Joint.

malleable iron, with threaded ends as standard, suitable for temperatures up to 425 deg. F. and pressures to 300 p.s.i. (steam), or as high as 2,000 p.s.i. (hydraulic) in the smaller sizes. Joints can also be furnished in steel and alloys, and in 4 and 6 inch sizes, flanged.

Interested readers may obtain complete information by addressing Barco Manufacturing Co., Dept. J-25, 500

nyb UNIT HEATERS



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For Continuous Heat Service up to 150 Pounds Steam Pressure

Horizontal Type

Ceiling suspension type with heavy duty welded steel fin-and-tube heating element. The rugged arc-welded construction outperforms and outlasts heating elements made of thinner non-ferrous metals. Avoids their expansion-contraction faults, yet has the same BTU efficiency. Ten basic sizes with capacities from 30 Mbh to 490 Mbh. Totally enclosed motors. (Extra heavy non-ferrous coils also available.)

Vertical Projection Type Also Available

For efficient heating from high-ceiling areas—for door heaters over small openings—or where the horizontal type is not applicable. Ten basic sizes; capacities from 27 to 332 Mbh.

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No. 513 Horizontal Type

No. 516 Vertical Type

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CERTIFIED RATINGS — APPROVED BY NAFM

nyb

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THE NEW YORK BLOWER COMPANY

SALES OFFICES • 3167 SOUTH SHIELDS AVENUE • CHICAGO 16

FACTORY, LAPORTE, INDIANA

Hough St., Barrington, Ill., with a request for Bulletin No. 223.

Siliconized Witch Oil

The Mitchell-Bradford Chemical Co., 2446D Main Street, Stratford, Connecticut has announced the development of "Siliconized Witch Oil."

The product is a rust preventative that provides extra protection and better lubricating qualities.

When applied over a black oxide, phosphate or other type of finish, Siliconized Witch Oil provides greater corrosion resistance. Siliconized Witch Oil is ideal for protecting work in process or finished parts in storage.

Features of Siliconized Witch Oil are: imparts higher resistance to oxidation; good moisture repellency; excellent lubrication qualities; polarized; superior corrosion resistance; enhances appearance of work.

Information and literature available upon request.

Pennsalt Fosbond

The Pennsylvania Salt Manufacturing Co., 1000 Widener Building, Philadelphia 7, Pa., has entered the field of chemical specialties for phosphatizing metals for corrosion resistance and paint bonding with a complete line of products for this field under the trade name "Fosbond."

The basic principle of phosphate coating techniques is that they apply a stable, controllable and chemically bonded crystalline surface to metals. For cold working, this coating provides a bond which holds lubricants under the most severe pressures encountered in presses.

In the field of paint bonding, the phosphate coating provides a strong bond for the organic finish applied to the metal, and also provides a protective coating against corrosion under the finish. Fosbond coatings also make possible a smoother final painted or finished surface. In other applications, such as on many ordnance items, phosphate coatings are used alone for protection against corrosion and wear.

Pennsalt has designed cleaners, activators and phosphatizing compounds in completely engineered and integrated cycles to provide maximum control in a wide variety of equipment and coating practices.

The Fosbond line includes a virtually complete range of phosphatizing compounds for application of various types of iron phosphate, zinc phosphate or manganese phosphate coatings. In addition, Pennsalt has developed a complete line of compounds for surface preparation prior to phosphatizing. These cleaning and surface preparation compounds employ activators which improve control of the ultimate coating desired.

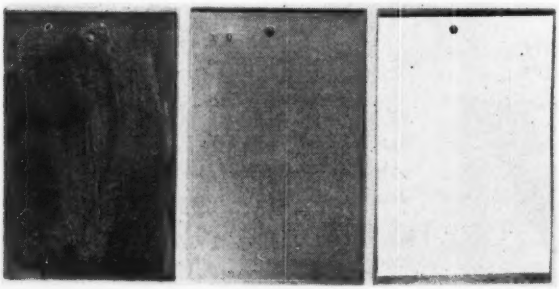
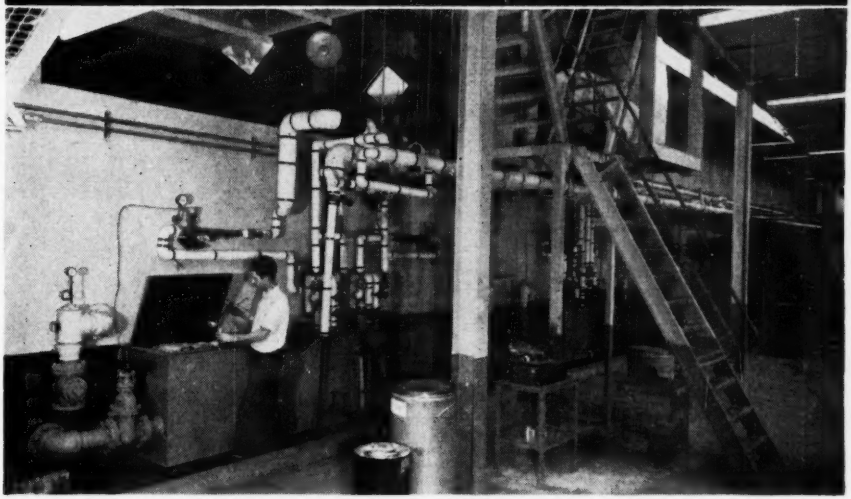


Fig. 1—Steel received at the fabricator's plant usually is rusted and soiled like the plate at the left. The center plate has had this rust and soil removed by Pennsalt's Fosbond cleaner and then has been coated with a Fosbond coating. The panel at the right has been spray painted over this coating. The phosphate coating protects the steel against corrosion in case of scratches or breaks in the paint surface and increases the adherence of the paint to the metal.

"ENGINEERED" EFFICIENCY*



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KOCH BUILDS:

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- SPRAY BOOTHS
- METAL WASHING EQUIPMENT
- COMPLETE FINISHING SYSTEMS FOR BOTH WOOD AND METAL
- AIR MAKEUP SYSTEMS

Efficiency that produces a better product at lower cost is an integral part of every complete finishing system engineered and installed by KOCH.

This statement is backed by hundreds of installations in America's largest industries during the past 80 years.

Let a KOCH engineer appraise your finishing problems now.

WRITE FOR FOLDER F-10

GEORGE KOCH SONS, INC.

EVANSVILLE, INDIANA

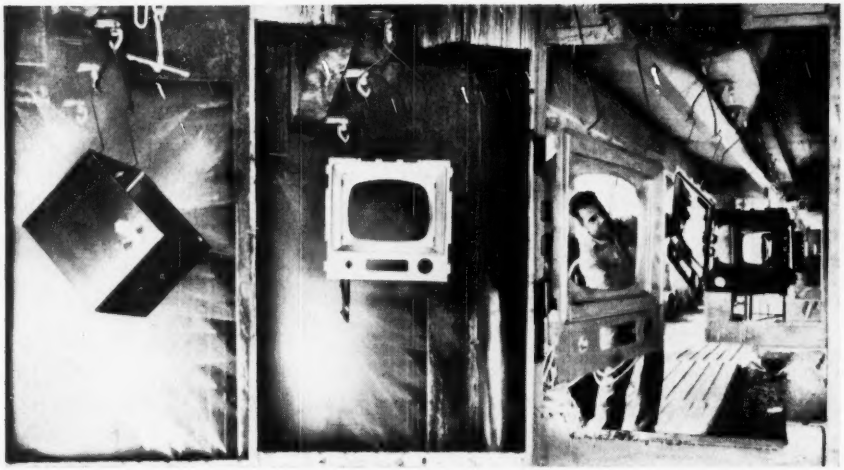


Fig. 2 (left)—A steel television cabinet, its surface especially prepared, enters a sprayer for an application of one of Pennsalt's Fosbond coatings to increase paint adherence and protect the metal from corrosion.
Fig. 3 (center)—The front panel of a steel television cabinet emerges from a spray tank with an application of Pennsalt Fosbond coating.
Fig. 4 (right)—The front panel of a steel television cabinet is spray painted after an application of Pennsalt Fosbond coating. The coating is applied to provide better adherence of the painted finish, thus improving the appearance and lasting qualities of the manufacturer's product.

In one series of these products the cleaning and phosphatizing actions are combined, thus eliminating one step in the cycle. Other cycles have been arranged to provide coatings of minimum weight, yet uniform and very fine grained. Such coatings give the metal more than adequate corrosion resistance and paint bonding action and make possible very smooth finished painted surfaces.

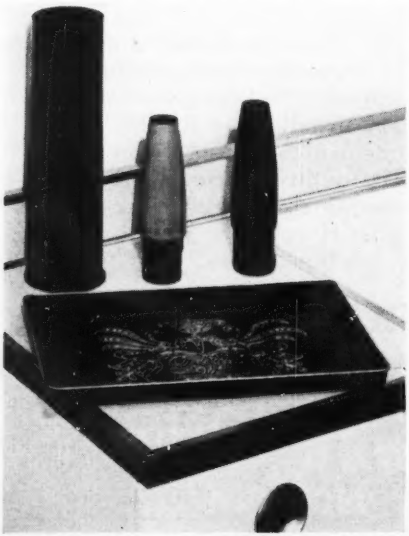


Fig. 5—Pennsalt's new Fosbond products for precleaning and applying phosphate coatings to steel for paint bonding and corrosion resistance have already been used in production in a wide variety of large field tests. Some typical products using Fosbond undercoatings are seen here. They range from the light duty coating for the hand painted tray to heavy duty coatings for the artillery shell bodies.

Dry Type Paint Spray Booth

Manufacturer: M & E Manufacturing Co., 2580 Winthrop Avenue, Indianapolis, Indiana.

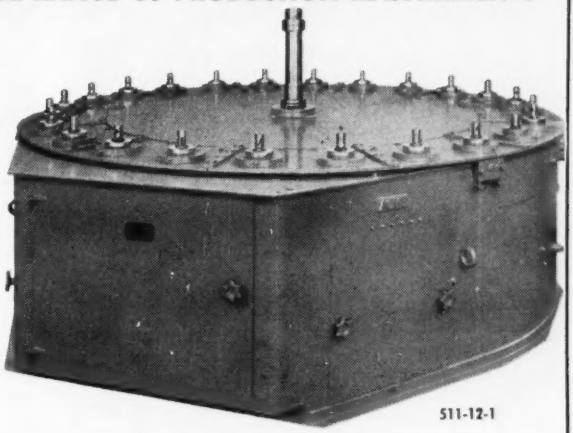
ACME *Rotary Automatics* ARE AVAILABLE

IN EITHER INDEXING OR CONTINUOUS TYPES

. . . TO MEET A WIDE RANGE OF PRODUCTION REQUIREMENTS

This ACME 10-ft. Combination Rotary, may be used for either indexing or continuous operation. It is equipped with 24 continuous revolving spindles for continuous rotary travel or for twelve station indexing operation utilizing every other spindle. When indexing, this table travels station to station with one second interval and up to 1200 indexes per hour.

CATALOG ON REQUEST



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Meet Production Schedules with ACME *Automatics!*

Acme Automatic Polishing and Buffing Machines provide a dependable solution to the problem of maintaining high civilian or defense production schedules at minimum unit costs. These highly efficient machines are available in types to handle parts of virtually any size or shape, with a wide variety of arrangements and accessory equipment to meet the specific finishing requirements. Problems of polishing, buffing, grinding, wire brushing, de-burring and Micro-finishing are effectively solved by Acme Automatics.

For recommendations, send blue prints of part or samples before and after finishing operations, with detailed information on finishing operations and production requirements. If production methods will cut your costs, we can set your job up in our experimental department and you can inspect it in operation.

ROTARY STRAIGHT LINE SEMI-AUTOMATIC AND SPECIAL *Polishing and Buffing Machinery*

SPECIAL MACHINERY — AUTOMATIC BUFFING MACHINES

ACME *Manufacturing Co.*

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

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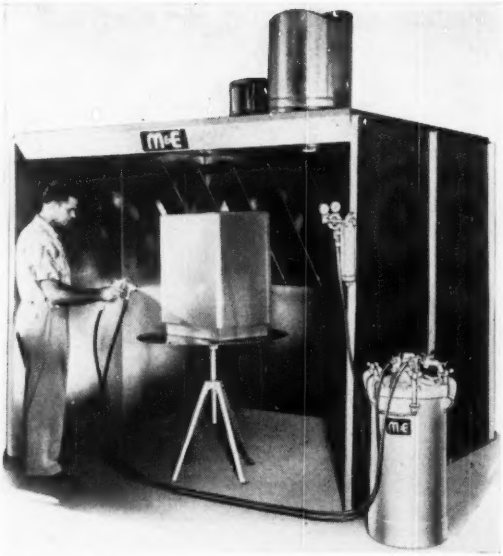

Dry Type Paint Spray Booth

New "Uniform Static" baffles have been incorporated in the improved M & E Dry Type Paint Spray Booths. The removable, vertically hung baffles correctly direct the flow of the air stream across the painted work to an opening in the rear or top of the booth. This breaking up or spreading out of the air stream decreases the air turbulence in the spray booth.

M & E booths, incorporating the "Uniform Static" baffles, are produced in standard stock sizes from 4 to 12 feet wide, and 7 to 8 feet high. Units are fabricated of heavy gauge steel with welded corners punched on 6 inch centers for easy assembly in the field.

Bulletin B200 is available on request.

Chrome Plating Concentrate

The Industrial Chrome Division of Ward Leonard Electric Co., Mount Vernon, N. Y., has developed a chrome plating concentrated solution, Chromasol No. 2.

Intended for use with self-contained Chromaster Industrial Chrome Plating Units, this new Chromasol No. 2 solution has deposit hardness characteristics comparable to any conventional chrome plate above the file hard range. Its features of "brute" hardness, heavy deposits, high abrasion resistance and ease of application, make it an ideal "puttin'-on-tool" for salvaging worn or undersize parts, gages and tools.

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• TANKS, FLOORS, FUME DUCTS AND PROCESS EQUIPMENT
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Over a Quarter Century of Experience
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Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!
It's MORSE
THOUSANDS IN USE saving time, labor, accidents!
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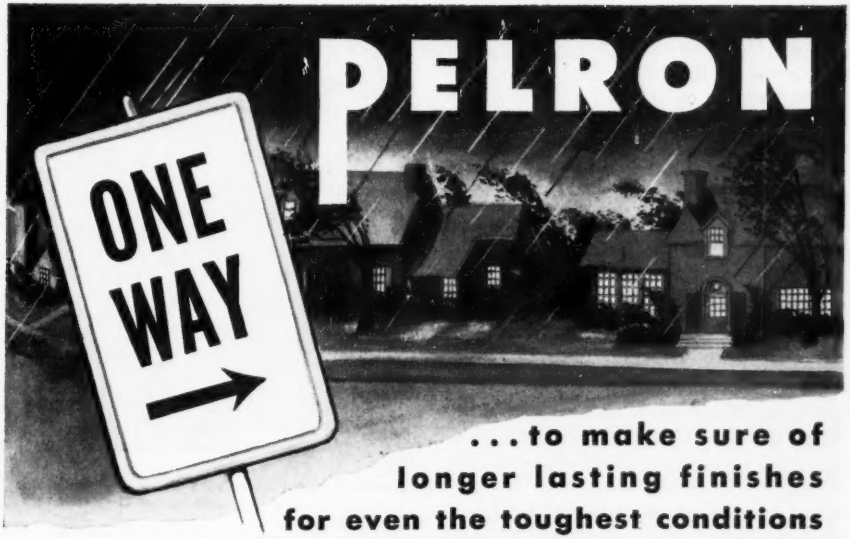


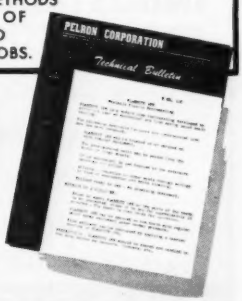
...to make sure of
longer lasting finishes
for even the toughest conditions

use PELRON Phoscote 299

The road sign above will say ONE WAY longer, no matter what the weather, if it's been properly cleaned and phosphatized before painting. "One way" to make sure is to use PELRON Phoscote combination cleaning and phosphatizing agent. It provides a better phosphate base for long lasting finishes at lower cost to you. Also many other phosphating chemicals available to meet *special* requirements. Get a recommendation from your Pelron representative today.

- MEETS REQUIREMENTS OF GOV'T. SPEC. JAN-C-490
- CLEANS AND PHOSPHATES IN ONE OPERATION
- MORE ECONOMICAL
- SPEEDS UP PRODUCTION
- PRODUCES A COATING WEIGHT UP TO 200 mg. PER SQ. FT.

SEND FOR TECHNICAL BULLETIN ON APPLICATION METHODS FOR ALL TYPES OF CLEANING AND PHOSPHATING JOBS.



PELRON
CORPORATION
INDUSTRIAL OILS AND CHEMICALS
FOR BETTER PRODUCTION AT LOWER COST

7740 W. 47th Street • Lyons, Illinois

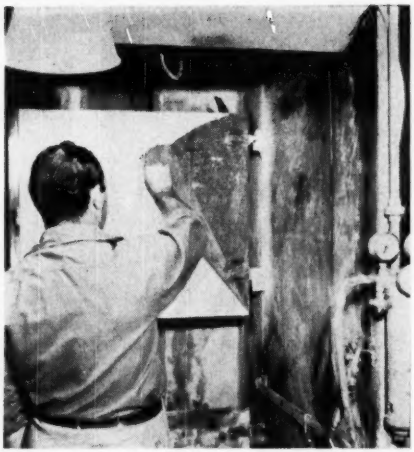
Chromasol No. 2 solution, like the original No. 1 solution (for cutting tools and parts in lighter deposits), is prepared for use simply by adding three parts water to one part Chromasol concentrate.

Plating techniques also remain essentially the same for both solutions. Rate of deposit is exceptionally fast, 0.002 inch per hour.

Literature available.

Spray Booth Shield

A product to aid in cleaning paint spray booths has been announced by Thompson & Co., Oakmont, Pa. Designated as "Spray Booth Shield," the substance protects the inner surfaces of spray booths as well as turntables and stands so that when paint overspray accumulates it may be removed easily and quickly.



Overspray paint is removed along with paper from spray booth coated with Spray Booth Shield.

Spray Booth Shield is of paste like consistency and is milky white in color. It can be applied to any surface by brush, trowel or knife to a thickness of about $\frac{1}{16}$-inch. Since it always retains its original consistency it may be used, after application, in either of two ways. First, it may be covered by any common type of paper. When paint overspray builds up, the paper can simply be stripped off by hand or with a scraper, and new paper added.

The shielding material can be used alone, so that overspray strikes it di-

SELENIUM RECTIFIERS

. . . built to your Specifications

INDUSTRIAL AND LABORATORY USE

- ELECTROPLATING
- ANODIZING
- PERIODIC REVERSERS
- CONTROLS

CATALOG AVAILABLE ON REQUEST

RAPID ELECTRIC CO.
2877 MIDDLETOWN ROAD, N. Y. 61, N. Y.

PAINT MIXER

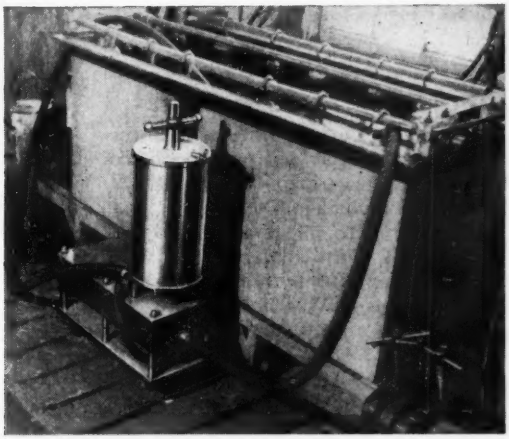
MIRACLE
5 GALLON
PAINT REJUVENATOR

All paint restored to original consistency without opening the can.
2 minutes per gallon.

MIRACLE PAINT REJUVENATOR CO.
127 E. 9th St., St. Paul 1, Minn.

Here's how to cut your losses

get better finished plated work — save time and labor



The *"Sealed-Disc"* Filter will remove all dirt, dust, and sludge from your plating solutions. You will no longer worry about pitting, spotting, poor adhesion, formation of nodules, etc.

More and more platers testify to the remarkable savings in operating time and labor that the *"Sealed-Disc"* Filter gives them. These cost-minded platers get better finished plated work and have found that their solutions last l o n g e r. *"Sealed-Disc"* Filters, designed to meet plating room requirements, are smaller, more compact and portable, than ordinary conventional filters.

Regardless of the size or type of your installation, there's a *"Sealed-Disc"* Filter to "fit your job". You can depend on a *"Sealed-Disc"* Filter for positive, trouble-free performance that's proof against even the invisible impurities that cause nodules and porousness, proof against losses caused by rejects and reworking. Write for complete details or contact your regular plating supplier.

ALSOP

ENGINEERING CORPORATION

Filters · Filter Discs & Sheets · Mixers · Agitators

811 Keen Street Milldale, Connecticut

Other Alsop Plating Room Equipment

We manufacture a full line of Mixers and Agitators covering a complete range of sizes, for mixing, blending, and dissolving. Stainless Steel Mixing Tanks are also available in a wide range of capacities. For full details and illustrations write for your free catalog.

rectly. Then, after paint accumulates, both paint and the shielding can be removed easily with a scraper or putty knife. As no waiting or drying time is required, booths can be used immediately after application of Spray Booth Shield.

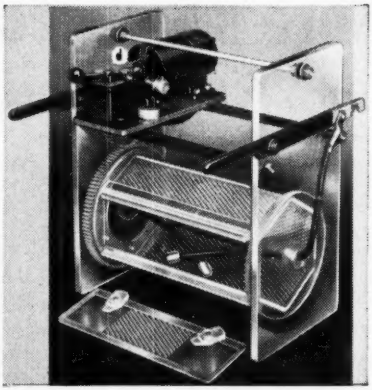
Portable Plating Barrel

A portable plating barrel streamlined for easy use has been announced by Belke Manufacturing Company, 947 N. Cicero Ave., Chicago 51, Ill.

Weighing only 28 pounds, the new Model SPX Porto-Plater is easily set in the plating tank by hand. "V" shaped cathode contact notch fits cathode rod at any point on the rod.

Complete Lucite end plates reduce cost, support plater, protect cylinder and mechanism in handling. Reversing switch with geared head motor drive turns cylinder in either direction and holds positively for loading and unloading.

Obstruction-free cylinder is constructed of high temperature Lucite, as well as the cover and attached cover locks. Ball contact is made by means of one-piece dangler cable. The cylinder is 6 x 12 inches inside, with a plating capacity of ¼ peck.



Portable Plating Barrel

Portable Polishing Head

A "bantam weight" Vonnegut Portable Polishing Head for contour finishing of metal, wood, plastic or ceramic workpieces has been added to the line of Vonnegut, Marschke and "G&P" products of Grinding & Polishing Machinery Corporation, 2530 Winthrop Avenue, Indianapolis 5, Indiana.

Doesn't YOUR product deserve a MOCO surface?

MOCO BUFFING COMPOUNDS

The "Long Mileage" line for all finishing requirements

MOCO TUMBLING BARREL COMPOUNDS

To keep pace with modern barrel finishing techniques

WE INVITE YOUR INQUIRIES

THE MOSHER COMPANY · 15 Exchange St., Chicopee, Mass.

Another example of Bede leadership

BEDE AIRLESS PAINT SPRAYING SYSTEM

This advertisement announces the first of three major new developments for the paint industry.

The most important development in the history of paint application

Now... obtain better coverage with less time, labor, and material, even over surface irregularities and foreign matter

Now... reduce paint loss due to overspray, and dispense with elaborate booths

Now... eliminate paint rebound into sprayer's face

Here is a revolutionary approach to industrial finishing, so far ahead in its field, so moderately priced, so easy to use, it is destined to swiftly outmode other paint application methods.

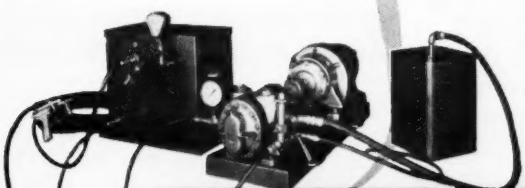
A new principle, harnessing *heat* and *hydraulic pressure*, results in *complete* atomization. No compressed air is used. With specially designed, patented equipment, paint is siphoned from container into the system by electrically driven hydraulic pump, sent through a heater, to a new, light-weight spray gun, where volume and angle is controlled by selection of nozzle.

Patent Pending

EASY TO INSTALL

SAVE MONEY!.. INCREASE YOUR PRODUCTIVE OUTPUT!

For informative literature, contact your local Bede distributor, or



BEDE PRODUCTS Inc.

Industrial Finishing Equipment

1100 Brookpark Road, Cleveland 9, Ohio • Telephone ONtario 1-9400

KEEP SPRAY BOOTHS SAFER FROM FIRE!

WITH NON-INFLAMMABLE

BOOTHCOTE #4

FOR DRY WALL BOOTHS

PERFECT LUBRICANT FOR FORMS

BOOTHCOTE #5 FOR WATER WASH BOOTHS

PERFECT RUST PREVENTATIVE

INSIDE STORAGE—OUTSIDE STORAGE

Makes frequent cleaning easy. Pre-mixed, ready to use, safe to store. Soves time, labor, no flaking off. Spray or brush on clean booth. When desired, operator peels off overspray in sheets. Advocated by insurance companies.

MONEY-BACK TRIAL OFFER: 5 gals. $6.25

KLEENCOTE WATER WASH COMPOUND

BREAKS UP PAINT—NO CLOGGED UP SYSTEMS

HYGRADE'S STERLING CREME
HYGRADE'S SKIN GUARD

protects hands, face and arms from paint, grease, ink, etc. penetrating skin. Soil washes off easily without harsh solvents or cleaners. Paint and grime washes off. Reduces blackheads and skin blemishes. **12 — 7 oz. Jars — $6.00**

HYGRADE'S STERLING CLEANER
HYGRADE'S HANDY SOAP & CLEANER
(WATERLESS HAND CLEANER)

dissolves grease, grime, fresh paint, tar, printers' ink, shellac, mastic cement, etc. without water. Use for cleaning refrigerators, ranges, etc., before shipping. **12 — 14 oz. Jars — $7.08**

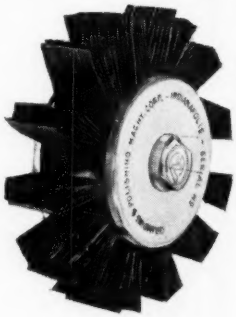
All prices f.o.b. Buffalo

HYGRADE

FOOD PRODUCTS CORP.

Industrial Div., 18 Stetson St., Buffalo 6, N. Y.

The head weighs just two pounds. Featuring 12 brushes and 12 relatively narrow strips of abrasive—each only 1½ inches wide—and a diameter of



Vonnegut Portable Polishing Head

only 6½ inches—the head requires less power than the larger 16 and 32 brush Vonnegut heads, permitting the use of smaller power tools. A variety of adaptors are made for applying the head to almost any type of small power tool up to 3,500 rpm.

The 12 brush head will polish concave areas of smaller radii than can be reached with the larger Vonnegut heads. Action of the Vonnegut Polishing Head, according to the company, is such that it forces the abrasive into contours and depressions of the work piece without cutting down the higher areas of the pattern.

PRODUCT LITERATURE

In requesting copies of catalogs or bulletins mentioned in this issue — use the READER SERVICE CARDS between the covers.

M-100, A JET-BLACK FINISH. A bulletin available from **Rust Proofing and Metal Finishing Corp.**, Commercial Ave. & Binney St., Cambridge 42, Mass., illus-

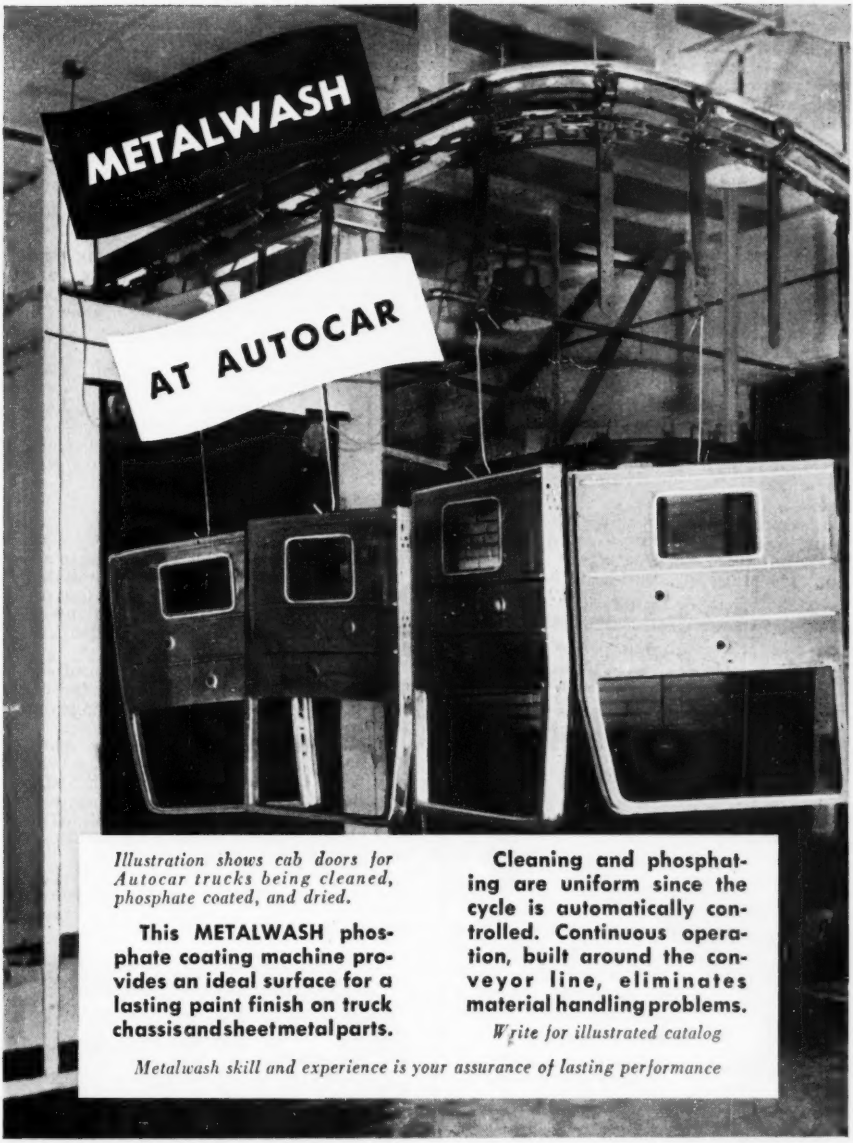


Illustration shows cab doors for Autocar trucks being cleaned, phosphate coated, and dried.

This METALWASH phosphate coating machine provides an ideal surface for a lasting paint finish on truck chassis and sheet metal parts.

Cleaning and phosphating are uniform since the cycle is automatically controlled. Continuous operation, built around the conveyor line, eliminates material handling problems.

Write for illustrated catalog

Metalwash skill and experience is your assurance of lasting performance

METALWASH MACHINERY CORPORATION
915 North Avenue, Elizabeth 4, N. J.
Representatives in principal cities

trates a number of applications of M-100, a jet black corrosion-resistant immersion finish applicable to iron, steel, zinc, and zinc die-castings. A page of production notes cites the advantages and uses of the product.

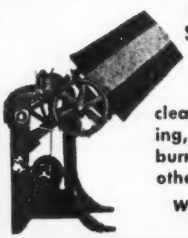
BUYER'S GUIDE OF TESTING INSTRUMENTS. A buyer's guide on electric testing instruments is available from the **General Electric Company,** Schenectady 5, N. Y.

The 16-page bulletin, designated **GEA-5469B,** provides data on such instruments as hook-on volt ammeters, hook-on wattmeters, hook-on power-factor meters, portable recorders, voltmeters and ammeters, phase-sequence indicators, hand pyrometers, surface roughness scales, insulation-resistance meters, and others.

Application data, features of each instrument, and prices are included.

SILVER SOL-U-SALT. The features of Silver Sol-U-Salt, a pure, white, crystalline, free flowing salt used to make up potassium silver cyanide plating solutions, are listed in an illustrated folder available from **Sel-Rex Precious Metals, Inc.,** 229 Main St., Belleville 9, N. J.

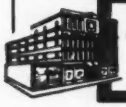
IS YOUR PROBLEM POLISHING?



HOLLAND SUGGESTS:

Motor Driven Tilting Tumbling Barrels for cleaning, polishing, grinding, deburring, sanding, burnishing and various other applications.

WRITE for New Holland Equipment Catalog



J. HOLLAND & SONS, INC.
MANUFACTURERS • DEALERS
276 SOUTH NINTH ST. • BROOKLYN, N.Y.

AHCOLOID METAL CLEANERS. **Apothecaries Hall Co.,** Waterbury, Conn., has issued **Builetin B-8** containing information about its complete line of cleaners for soak tanks, electrolytic cleaning, power washers, and tumbling barrels.

In table form the folder lists the various cleaners as applied to the different metals, recommending conditions under which each should be used.

GRITCLOTH FOLDER. An illustrated folder describing an open mesh sanding fabric designated as Gritcloth is available from **Bay State Abrasive Products Co.,** Westboro, Mass. The folder describes the characteristics and advantages of the abrasive cloth and lists a few of its many applications in the finishing industry, such as smoothing metal prior to painting and smoothing various primer and sealer coats. A sample of the abrasive cloth is attached to the folder.

CLEPCO CATALOG An Electric Immersion Heater Catalog, featuring a section of application data for calculating the power requirements for heating processing tanks, has been prepared by the **Cleveland Process Co.,** 7016 Euclid Ave., Cleveland 3, Ohio.

The data simplifies the problem of estimating heat losses, determining the correct KW needed and selecting proper heater size for tank capacity.

Clepco's calculating guide also points out that all cleaning and finishing tanks should be automatically controlled since any change in room temperature, work processed, liquid level, etc., will affect tank temperature unless thermostatically held to required degree.

Fully described in the new catalog are two types of electric immersion heaters manufactured by Cleveland Process Company.

WRITE FOR INFORMATION AND LITERATURE

When you can SEE the difference . . . IT'S TOO LATE!

Prime with STANTITE!

One switch box was primed with Stantite, the improved wash primer, before top coating; the other was not. Exposure discovered the difference and proved Stantite's strong resistance to corrosion and rust creep. And after years of research in Stanley laboratories there are other differences you can see right off . . . Stantite handles easier; it's easier to mix and easier to spray. Add these advantages to its excellent adhesion to all surfaces and its adaptability to most top coats. The result: a wash primer that insures your finish. For full details about spraying Stantite and clear Stantite for dipping write Stanley Chemical Co., 31 Berlin Street, East Berlin, Connecticut.

STANLEY

Industrial Coatings

STANLEY CHEMICAL

LACQUERS SYNTHETICS JAPANS ENAMELS

"A PICTURE STORY OF THE R. C. MAHON COMPANY." A 46-page, two-color, illustrated book designed to portray the company's extensive metal fabricating and production facilities, its products and services, and its capacity to serve industry, has been produced by **The R. C. Mahon Company,** 6565 E. Eight Mile Road, Detroit 34, Michigan.

In this book, the activities, products and production methods of the eight divisions of the company are treated separately. It unfolds a picture story of the company's overall operation which is not only interesting and impressive, but educational as well.

BARREL FINISHING BOOKLET. The Almco Supersheen Process is detailed in Almco's newest publication, **"Advanced Speed Finishing."** Much of the information contained in this booklet represents years of research and development and has heretofore remained unpublished.

"Advanced Speed Finishing" has been published primarily to introduce the trades to the newest, most economical way to handsomely improve the finishes of their products and solve their finishing problems.

This 52-page booklet is offered free by **Almco Supersheen, Division of Queen Stove Works, Inc.,** Dept. Q-1, 505 Front Street, Albert Lea, Minnesota.

GLOBE BUFFING COMPOUNDS. A six-page catalog, **Bulletin T-4,** describing Globe Compound Company buffing compositions and applications, is available from **Globe Compound Co.,** Waterbury-Bristol Rd., Waterbury 12, Conn.

Listed in the bulletin are general recommendations, offered as a guide for cutting and coloring operations for such materials as aluminum, brass, chromium, copper, die castings, gold, nickel silver, plastics, silverware, and steel.

ELIMINATE ZINC PLATING HEADACHES

by purifying your solution with

McKeon's Zinc-Brite

Write for complete information.

Sulphur Products Co., Inc.

228 McKEON WAY GREENSBURG 6, PA.

Yes: WE'D LIKE TO GET A COPY OF THE BIG NEW M & E SPRAY FINISHING EQUIPMENT GUIDEBOOK

SPRAY BOOTHS - Systems

M&E MANUFACTURING COMPANY

PAINT SPRAY FINISHING SYSTEMS

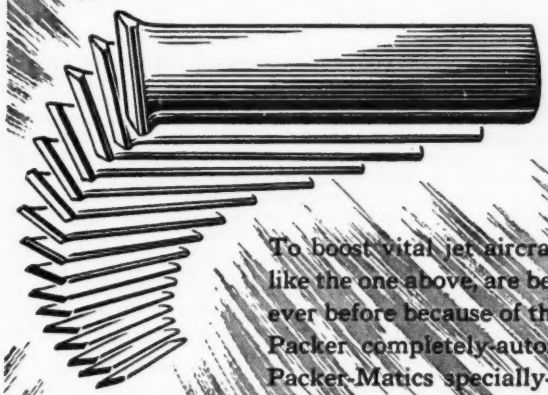
INDIANAPOLIS 5, INDIANA

Name_____

Title_____ Street_____

Company_____ City_____ State_____

Jet blade production increased



by PACKER-MATIC MACHINES

To boost vital jet aircraft production jet blades like the one above, are being produced faster than ever before because of the speed and efficiency of Packer completely-automatic buffing machines. Packer-Matics specially-designed to do this one job are finishing at a high rate of production, to exacting specifications, without a single finishing reject. Packer machines are also hard at work buffing, grinding, or de-burring reciprocating engine parts for planes, tanks, and vehicles, casings for shells, and many more items essential to defense. If higher finishing room production can help you, whatever you make, write today for more information about the versatility of continuous, indexing, or straight-line Packer-Matics: the Packer Machine Company, 400 Center St., Meriden, Conn.

AUTOMATIC

PACKER-MATIC

AUTOMATIC MACHINES FOR BUFFING • POLISHING • DEBURRING • GRINDING

THE PACKER MACHINE COMPANY • MERIDEN, CONN.

INDUSTRIAL OVENS. An illustrated brochure describing the company's products for drying and baking operations in connection with paint finishing or other finishing processes, is available from the **Kirk & Blum Mfg. Co.**, 3116 Forrer St., Cincinnati 9, Ohio.

The brochure illustrates and describes a number of typical drying and baking installations in various industries, showing how ovens can be designed to accomplish efficient baking or drying under the many, varied conditions of product manufacture.

A data sheet to assist in oven selection is included with the oven brochure.

DI-PHASE METAL CLEANING. An illustrated bulletin describing Di-Phase metal cleaning methods and the mechanical cleaning equipment used in the process is being distributed by **Solventol Chemical Products, Inc.**, Detroit 3, Michigan. The folder discusses the advantages of the Di-Phase metal cleaning process (both dip and spray), and the design, construction and operation of the metal washing equipment manufactured by the company. A number of suggested applications for the process and the equipment are included.

MURRAY-WAY MICRO-POLISH BROCHURE. A 10-page illustrated booklet providing descriptions of Micro-Polish units for polishing coils, blanks, and sheets of steel, brass, aluminum, and other materials, may be obtained from **Murray-Way Corp.**, Maple Road E., P. O. Box 180, Birmingham, Mich.

Engineering specifications of the principal elements of the Micro-Polish units are listed along with a discussion of the design and operation of the parts. Auxiliary equipment used in connection with a Micro-Polish installation, including loader and unloader, deburr rolls, discharge rolls, oil mist collector, transfer rolls, conveyors, filter, is illustrated and described.

FILTER PUMPS. An illustrated folder describing Sethco Pump Models LSI-5, LSU-10, LSI-10, and SSU-10, SSI-10, is available from **Sethco Manufacturing Co.**, 70-78 Willoughby St., Brooklyn 1, New York. The LS Models are available with Lucite filter cylinders and stainless steel centrifugal pumps. The filter is so constructed to make it possible to observe the clarity of the solution being filtered. The SS Models are available with stainless steel filter cylinders and stainless steel centrifugal pumps. Details of the construction of the filter and filter tube, together with operational details, are included in the folder.

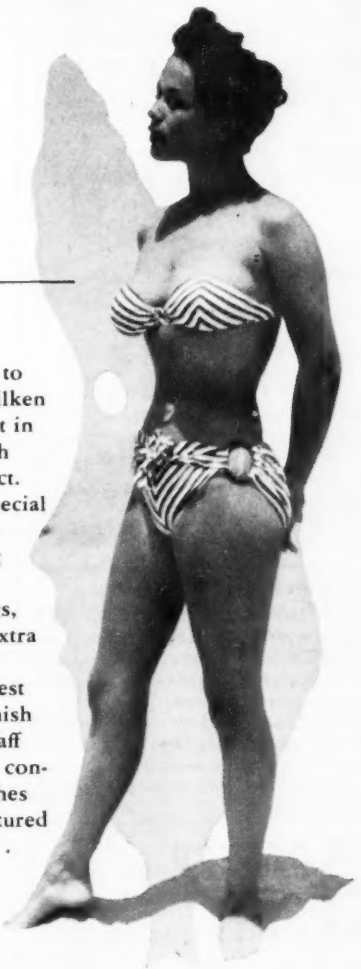
Also described in the literature are several models of special purpose full view filter equipment in which Hastalloy, Pyrex glass, Haveg, and Neoprene are employed as materials of construction in various elements of the filters.

MASKING TAPE
DIE-CUT TO YOUR EXACT SPECIFICATIONS FROM
SCOTCH BRAND
INDIVIDUAL PIECES • ANY SIZE OR SHAPE
For quick, accurate masking operations.
PHONE OR WRITE **PANOCO**
505 Carroll St., Brooklyn 15, N.Y.

CHEMSTEEL CONSTRUCTION COMPANY, INC.
301 Chemsteel Bldg., Walnut St., Pittsburgh 32, Pa.
Send data on Engineering & Construction facilities for
ACID-ALKALI-PROOF CONSTRUCTION
of processing & storage tanks & flooring in
☐ Steel Plant ☐ Chemical ☐ Textile ☐ Food
NAME.....
COMPANY.....
ADDRESS.....
CITY.....ZONE.....STATE....

For a real good polishing job use
Keystone TURKISH Emery
FRESH SUPPLY AVAILABLE
KEYSTONE EMERY MILLS *Write for Sample* 4316 Paul St., Phila., Pa.

SLEEK



Whether you want your product to be easy on the eyes, smooth and silken to the touch, or streamlined to fit in with your packaging plans, much depends on the coating you select. Some products, too, present special problems in the rough handling they must withstand, or the long wear they must provide. Some products require custom coatings, laboratory-developed to meet extra requirements. If one of these problems is yours, may we suggest you consult with Rockford Varnish Company, where a competent staff of experienced technicians are constantly producing just such finishes for an endless variety of manufactured items. Your inquiry is invited . . .

Research, Quality, Service

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS

Manufacturers of Protective and Decorative Coatings

Affiliate
GORDON BARTELS CO.
Roller Coating Specialists

Are You In A Stew?

About Rising Prices--

LET **POTTER**

Save You Money on

THINNERS

POTTER can deliver high quality THINNERS at lowest prices because we are **specialists,** making only thinners.

Here's how it's done:

- Specialization—for over 28 years
- Large Sales Volume
- Streamlined Overhead
- Solvent bought in tank car lots only

Over 600 satisfied users

POTTER'S THINNERS are EASY TO TEST. Just mix with your lacquer in regular way and observe results. If it mixes all right and dries all right—it is all right. With our method of blending solvents, we can easily "Tailor Make" special thinners for difficult applications. Whether you need a special thinner or a regular Potter product—**we can save you money. Mail this Coupon, today!**

POTTER PAINT CO., INC.

CORTLAND 2, N. Y.

THINNER SPECIALISTS

The product we make is:_____

We use Lacquer Thinner for:

☐ Spray ☐ Dip ☐ Cleaning ☐ Other_____

We use Lacquer Thinner on:

☐ Metal ☐ Wood ☐ Other_____

We want it to dry:

☐ Fast ☐ Slow ☐ Medium

Name_____

Address_____

City_____ Zone____ State_____

PURIFICATION OF METAL SALT SOLUTIONS. BULLETIN NO. 26 issued by **Buffalo Electro-Chemical Co., Inc.,** available from Becco Sales Corp., Station B, Buffalo 7, N. Y., emphasizes the versatility of hydrogen peroxide as an oxidizing agent for use in a variety of industrial applications.

The four-page booklet contains six abstracts of available literature said to illustrate the applicability of hydrogen peroxide to a variety of problems in the refining of metal salt solutions.

BLACK MAGIC S. S. BLACKENING PROCESS DATA SHEET. A data sheet providing full operating instructions including the solution preparation and processing procedure for the Black Magic S. S. Blackening Process is available from **The Mitchell-Bradford Chemical Co.,** 2446D Main St., Stratford, Connecticut. The data sheet points out that this process is designed to produce an adherent black finish on stainless steels, cast and malleable irons. Suggested methods of handling parts in the process as well as safety precautions are included in the data sneet.

ULTRASONIC CLEANING CATALOG GEA-5669, available from **General Electric Co., Special Products Division,** Schenectady, New York, describes the application of ultrasonic energy to the degreasing of small metal parts. The illustrated bulletin describes the ultrasonic cleaning as applied to small metal parts and cites the method of operation and the advantages of the process.

HYSOL 9000 BULLETIN. A catalog describing the uses and properties of rigid polyvinyl chloride, fabricated to exact specifications, has been issued by **Houghton Laboratories, Inc.,** Bush St., Olean, N. Y.

Rigid polyvinyl chloride, designated as the Hysol 9000 Series, was originally developed as a substitute for steel piping in basic chemical plants. Outstanding additional properties of fabricated Hysol 9000, however, make it highly advantageous for many additional uses.

Other uses include piping, tubing, duct work, work tables, sinks and a wide variety of other applications. Houghton Laboratories now offer complete fabricating facilities for Hysol 9000.

DIP-PAK NO. 637 DATA SHEET Available from **Fidelity Chemical Products Corp.**, 470 Frelinghuysen Ave., Newark, N. J., is a data sheet describing the physical properties and chemical characteristics of Dip-Pak No. 637, a product which may be used as a plating stop-off or as a temporary strippable plastic coating. The data sheet outlines other uses for the product including that of a permanent coating for metals and an insulating compound.

RUSTPROOFING AGENT FOR STEEL. Enthone, Inc., Dept. PF, 442 Elm St., New Haven, Conn., has available a bulletin describing Compound NR-31, a rustproofing material for iron and steel. The leaflet explains that the compound is usually used in a concentration of 1 oz./gal. and can be added to either hot or cold water and applied to prevent rusting during drying or storage as well as to give subsequent rust protection. The nature of the compound is discussed and instructions as to its use, including control, are set forth. A number of suggested uses for the compound are listed.

today's "wonder drug" for industry

Saves up to 95% of FINISHING COSTS on almost all types of parts!

Write for NEW, FREE 52-page Catalog, "Supersheen Speed Finishing." Gives complete story — hundreds of "before and after" pictures.

Dept. A-11

ALMCO Supersheen
AMERICA'S LARGEST MANUFACTURER OF ADVANCED BARREL FINISHING EQUIPMENT - MATERIALS AND COMPOUNDS
ALBERT LEA, MINNESOTA

IOLYTE LAMINATED FIBERGLAS **TANKS, DUCTS, CROCKS**

PRICE LIST—CROCKS

GAL. CAP.	OUTS. DIAM.	OUTS. HGHT.	LIST COST
5	9"	18"	$24.00
10	9"	36"	30.00
10	16"	12"	28.00
12	16"	14"	30.00
15	16"	18"	35.00
20	16"	24"	40.00
30	16"	36"	49.00
40	16"	48"	59.00
14	18"	12"	35.00
20	18"	18"	40.00
26	18"	24"	45.00
30	18"	28"	49.00
40	18"	36"	59.00
50	18"	48"	69.00
27	22"	18"	49.00
30	22"	20"	53.00
55	22"	36"	70.00
73	22"	48"	83.00
55	28"	22"	76.00
95	28"	36"	98.00
125	28"	48"	125.00

Fabricated to Your Specifications!

- **NO MOLDS NEEDED**—Made *any size, any shape,* at no extra cost and no loss of delivery time.
- **UNIFORM DIMENSIONS — NO TAPERING** — Dimensions are same at bottom and top . . . means larger capacities than tapered molded tanks.
- **FLANGES, DAMS, etc.**—Can be inexpensively equipped with flanged connections, holes, overflow dams, baffles, separations, etc.

Write for literature, prices, and tables of chemical resistances.

SCHORI PROCESS DIVISION OF FERRO-CO CORP. 8-07 43rd Road, L. I. C. 1, N. Y. Factory: 59-31 54th St., Maspeth, L. I.

NEWS of the Industry

NEW PLANTS

Construction of new plants in Venezuela and Mexico has been announced by Arthur W. Steudel, president of **THE SHERWIN-WILLIAMS CO.**, Cleveland, Ohio. Mr. Steudel stated, "In Mexico, the new plant in the industrial area of Vallejo will double our production in that country. Part of the increase will be used to meet immediate demands. The balance will enable us to develop our markets there in accordance with plans made when the first Mexico City plant was built in 1947."

The Venezuelan plant at Valencia is being built in cooperation with Eugenio Mendoza & Co., one of that Latin American country's leading industrial organizations. The company, active in the machinery and building materials fields is erecting the production facilities with the aid of Sherwin-Williams engineering and technical supervision.

Actual operation of the plant will be headed by Walter Spencer of Sherwin-Williams, who has had similar experience in the United States and Cuba. This coalition of native capital and North American technical skill marks the first venture in such cooperation in South America by the paint manufacturing firm.

In addition to plants in Mexico and Cuba, Sherwin Williams has Latin American manufacturing facilities in Brazil and Argentina. The first of them to be put into operation was the Cuban plant at Havana, erected in 1930. The Buenos Aires installation was completed in 1940. The Sao Paulo, Brazil plant has been operating since 1944.

SCHAFFNER MANUFACTURING COMPANY, INC., Schaffner Center, Emsworth, Pittsburgh 2, Pa., has just completed a new experimental and research laboratory which will be used exclusively for research and development work for Schaffner buffing and polishing compositions. However, its personnel and facilities are available to help solve metal finishing problems that arise in the metal finishing industry. The industry is invited to use this laboratory for buffing and polishing problems.

To meet the ever-growing demand for protective ceramic coatings for many types of metals used in military, industrial and civilian applications, the **GENERAL CERAMICS AND STEATITE CORPORATION** has established a new ceramic coating department.

These coatings will be produced by the Chemical Equipment Division in the company's plant at Keasbey, New Jersey. Ceramic coatings for metals have proven their worth in numerous applications where super-high temperatures and severe operating conditions are continuously encountered.

For example, ceramic coated jet engine exhausts resist oxidation and erosion at temperatures well above the melting points of the metal. Metals not subject to rust at more ordinary temperatures, unite with oxygen readily at temperatures starting at about 1600 deg. F. Other metals are eroded by rapidly moving air, particularly if carbon is present in the air. Ceramic coatings resist these metal destroying actions, promote longer service life, and provide more trouble-free performance.

In numerous applications, these new ceramic coatings have provided greater economy by making metal substitutions practical and have accomplished the conservation of critical materials. Components for which coatings have proven especially advantageous are mufflers, piping, miscellaneous aircraft assemblies, smokestacks, chemical processing equipment, food machinery, T.V. picture tubes and other industrial appliances.

Plans have been made by the General Ceramics and Steatite Corporation to produce specialized coatings for retarding metal oxidation, reflecting radiant energy in addition to radiation suppressing and high temperature insulating ceramic coatings.

While the current working program now comprises high alloys, General Ceramics coating specialists are giving emphasis to the application of specialized coatings of low carbon steel and low alloys such as air hardening steels, NAX, Timken 1722-S, chromium - molybdenum bearing types and similar metals. In addition to these steel and alloy coatings, chemically-resistant coatings on steel, and enamels of high flexibility and high friability on steel and aluminum are also available.

The General Ceramics and Steatite Corporation, Chemical Equipment Division, Keasbey, New Jersey, offers industry a consulting service and will gladly supply samples and prototypes for the purpose of making practical tests.

L. Duane Faulman, president of **IMPERIAL RACK CO., INC.**, has announced the consolidation of Imperial's Hazel Park and Flint, Michigan, plants. Personnel and machinery from both these plants have moved to a larger location at 1109 East Stewart Avenue in Flint, Michigan. This merger will enable Naraco to offer a more efficient service to the automotive industry in the area.

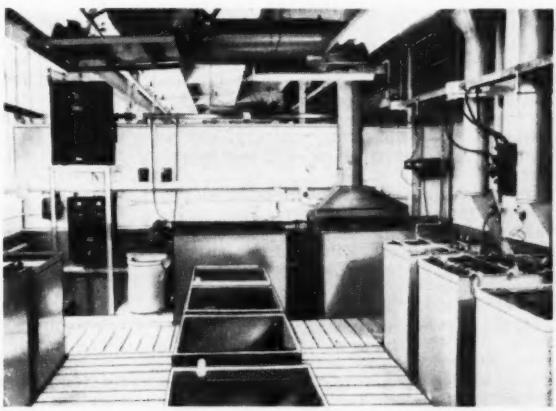
Imperial's new plant, now in operation, has over twice the floor space of both previous plants combined, and its facilities include the latest conveyor and rack making equipment. Among the new equipment installed is a huge, specialized tank for applying Naraco's own insulation to oversized parts and equipment. The building also houses modern offices for Naraco's engineering staff.

JAMES BENNETT, graduate of General Motors Technical Institute and former process engineer for the Buick Motor Car Company has been appointed as plant manager of Naraco's newly consolidated Imperial Plating Rack Company of 1109 East Stewart Avenue, Flint, Michigan. Mr. Bennett also served three years with the Army Engineering Corps.

ALVIN SMITH has been appointed as sales manager of the Imperial Plating Rack Company. Mr. Smith was formerly with the Buick Motor Car Company for twelve years and has had extensive experience in handling problems connected with designing and manufacturing plating racks and fixtures and materials handling equipment for the automobile trade.

The **J. C. MILLER COMPANY** of Grand Rapids, Michigan, has established laboratory facilities for product testing and product control. Pictured here is a section of the laboratory containing complete pilot line plating facilities where all newly developed buffing compound formulas and production samples are checked for cleanability and subsequent platability.

This section of the laboratory facilities enables plant engineers to evaluate and recommend proper compounds consistent



J. C. Miller product testing laboratory.

with job requirements and client's cleaning cycle. Product control personnel constantly check production samples to assure uniformity in accord with the company's policy of "controlled compounds."

COMPANIES

John S. Coppage

Expansion of the distributor organization for "Honite" barrel finishing abrasive chips, compounds and equipment, has been announced by **MINNESOTA MINING AND MANUFACTURING COMPANY**, 900 Fauquier St., St. Paul, Minn.

"To date, twelve distributors have been appointed in major industrial centers," stated John S. Coppage, merchandising manager of 3M's "Honite" division.

"In selecting distributors," Mr. Coppage said, "we look for the small business man who has had considerable experience in the metal finishing trades. Ideally, a distributor should fill three requirements: (1) he carries local stock for prompt delivery; (2) he maintains a shop for sample processing and job finishing and has the know-how for training personnel in barrel finishing engineering; and (3) he maintains a sales and service organization capable of working with customers from the original installation on through their day-to-day metal finishing problems."

Mr. Coppage stressed that distributor's shops are available for barrel finishing job work at any time, and that the distributors are backed by 3M's group of "Honite" sales engineers, skill and know-how.

Distributors are already located as follows: Micro Deburring Co., 5827 West Lake St., Chicago 44, Ill.; Mechanical Finishing Co., 7032 Vine Street, Cincinnati, Ohio; Metals Finishing Corporation, 836 East 10 Mile Road, Hazel Park, Michigan; Metal Parts Processing Co., 74 Chapel Street, Newark, New Jersey; Metal Finish Inc., 410 Frelinghuysen Ave., Newark 5, New Jersey; M. E. Baker Co., 25 Wheeler St., Cambridge, Mass.; Deburrco, Inc., 2212 N. 27th St., Philadelphia 32, Pa.; Gerell Mfg. Co., 3521 King Ave., Cleveland 14, Ohio; Mosher Company, 15 Exchange Street, Chicopee, Mass.; Precision Tumbling & Supplies Co., 149 Ravencrest Drive, Stratford, Conn.; Sundmark Supply Co., 1700 East Gage Ave., Los Angeles, California; and Tumbling Products Inc., Indianapolis.

Plans for an expanded research program, including a further addition to its laboratories, have been approved by the board of directors of **E. F. HOUGHTON & CO.**, manufacturer of oils, chemicals and hydraulic leathers, 303 W. Lehigh Ave., Philadelphia.

An additional floor will be added over the present research laboratory to provide required facilities for the program, and the staff of chemists will be increased. This expansion is particularly aimed at four fields, all of which represent areas of interest consistently covered by this company in past years.

1. A new approach to the project of cutting fluids for modern machine tools, following up recent developments.
2. Further study of chemical surface treatment of metals, including new developments in phosphating compounds, pickling inhibitors and coloring agents.
3. An expanded heat treatment program, including new furnaces and research on new types of molten salt baths for treating steel and non-ferrous metals.
4. Added emphasis on textile oils and synthetic processing agents for the many new man-made fibers being perfected.

Construction will begin this Fall, with the hope of starting on this further research program early in 1954. Houghton's present laboratory was built in 1928 and an addition constructed in 1941.

Two of the oldest and best known firms in the water conditioning business have united: **REFINITE SALES COMPANY**, Omaha, Nebraska, has joined forces with **ELGIN SOFTENER CORPORATION**, Elgin, Illinois. Both Elgin and Refinite are respected pioneers and leaders in the water conditioning field, Elgin having been established in 1908 and Refinite in 1916. The combined products of these firms comprise a most complete line of water conditioning equipment and water treating chemicals and the joining of the research, technical, and sales organizations provides a far broader engineering service in principal cities throughout the United States, Canada, Mexico, and many foreign countries.

You WILL BE IN GOOD COMPANY when YOU USE...

SURPHOS®

Metal Phosphating Chemical

Currently Used On:

Sheet Steel, Machined and Cast Iron . . . Truck Hoods and Fenders . . . Auto Accessories . . . Tractors and Accessories . . . Clothes Washers . . . Stoves . . . Dish Washers . . . Hot Water Heaters Jackets . . . Air Conditioning Cabinets . . . Gas and Oil Space Heaters . . . Outboard Motors . . . Toys . . . Agriculture Implements . . . Lighting Fixtures . . . Diesel Locomotives . . . Many other items.

TO USE SURPHOS:

. . . dissolve in hot water to a concentration of one ounce per gallon and apply to metal by dipping or spraying in a power washing machine. Acid proof equipment not needed.

SURPHOS Conditions *Metal For Painting:*

- **CLEANS**
- **FORMS PHOSPHATE COATING**
- **PREVENTS RUSTING**
- **IMPROVES ADHESION of PAINT**
- **INCREASES HUMIDITY and SALT-SPRAY**
- **RESISTANCE OF PAINT**

INDUSTRIAL CHEMICAL PRODUCTS COMPANY

3778 BELLEVUE AVENUE **DETROIT 7, MICH.**

Representatives In Principal Cities

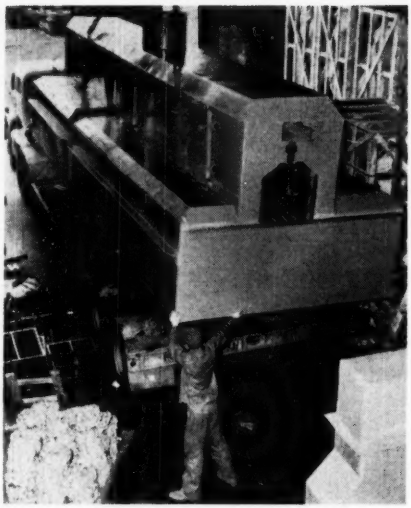
In Canada made and sold by Boyle Chemicals Ltd., Longbranch, Ont.

The industrial water conditioning products and services of both companies are now being handled by a combined sales engineering organization known as **ELGIN-REFINITE, INC.**, a newly created division of Elgin Softener Corporation with headquarters at Elgin, Illinois. Officers of Elgin-Refinite, Inc. are C. T. McGill, chairman of the board; E. W. Scarritt, president; C. A. Spaulding and Dr. George Lindig, vice presidents; R. W. Leach, treasurer; and J. F. McGill, secretary.

The line of Elgin zeolite softeners, deionizers, ion exchange systems, water treating chemicals and process water conditioning methods are supplemented and strengthened by similar Refinite products and fully rounded out by the addition of Refinite deaerating heaters, hot and cold lime soda softeners, diatomite filtration, and other Refinite developments.

When Michigan's most damaging fire in history leveled General Motors' huge automatic transmission plant at Livonia recently, the pessimists were saying that it would take months, if not years, before GM would be turning out cars equipped with Hydramatic drive again.

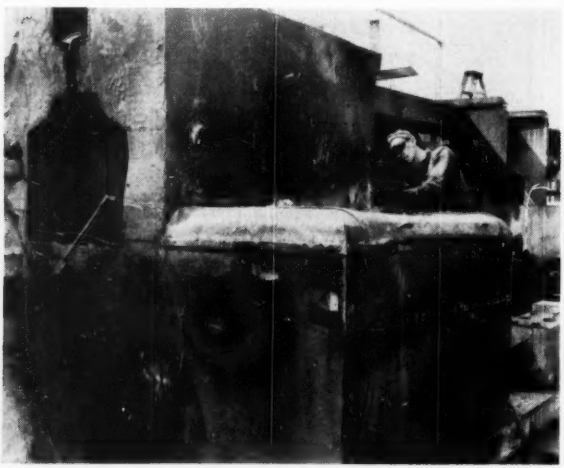
That's because they forgot to count on the American tradition of neighbors pitching in to help another in distress. That the stricken neighbor happens to be a colossus in the industrial world is beside the point.



AND AFTER! Three weeks later, one week ahead of schedule, the fire ravaged cleaning machine rolls out of the Detrex plant good as new. It is headed for Willow Run where GM is setting up temporary facilities to produce its automatic transmission.

The ashes of the Livonia disaster, for instance, were still warm when General Motors heard from A. O. Thalacker, president of the **DETREX CORPORATION** of Detroit, producer of industrial metal cleaning equipment and chemicals.

Mr. Thalacker offered GM top priority on all facilities at the Detrex plant at Woodrow Wilson and Oakman Boulevard in Detroit to salvage metal-cleaning equipment damaged in the fire, regardless of whether the equipment was originally made by Detrex or not.



BEFORE . . . Little more than a charred and twisted hulk remained of this big washing machine taken from General Motors' huge Hydramatic plant in Livonia, Mich., after a fire caused an estimated $70,000,000 damage.

GM quickly accepted the Detrex offer and, almost at once, truck loads of twisted and charred metal began pouring into the Detrex storage area. To the laymen, the material looked like so much junk, utterly beyond repair.

Working on a 30-day deadline to salvage or replace, Detrex employees hastily constructed temporary shelters over the gutted machinery and began operation. Today the word is: the deadline is being met. Except for one small machine, all of the equipment will be salvaged. The first machine was shipped out to GM's new transmission facilities at Willow Run, Mich., in three weeks' time.

Thirty-five industrial representatives of the **SHERWIN-WILLIAMS COMPANY** met recently in Chicago where Don S. Gaarder, general manager of industrial sales reported a gain in gross industrial sales. The meeting, planned and conducted by C. F. Harris, manager, industrial sales for Western Zone, was also attended by Paul Bewie, Western regional manager, Wynn Everett, Southwestern regional manager, Gene Herzog, PMI sales manager, and Frank E. Ehrett, Great Lakes industrial sales manager.

Research projects and new products, including Heat Resisting Finishes and Industrial Emulsions, were demonstrated by a group of technicians headed by Richard Moore, Francis Thomas, Ken Brown, and Robert Albrecht.

Jelco Products, 153 E. 26th St., New York, N. Y., has become exclusive distributor of tumbling and ball burnishing equipment, compounds and supplies, manufactured by **ASTAR TUMBLING MACHINE CORP.**, 36 Clinton St., Yonkers 2, N. Y.

THE MICHIGAN OVEN COMPANY has announced the appointment of the Marin-Mercier Company, headed by Ray W. Mercier and John J. Marin, 936 Exchange Street, Rochester 8, New York, as representatives in the Central New York territory.

Messrs. Mercier and Marin have been associated with Michigan Oven Company for several years and are well acquainted

NEWCOMB-DETROIT

PIONEERS IN ENGINEERING, MANUFACTURE AND INSTALLATION OF

INDUSTRIAL OVENS
SPRAY BOOTHS
PARTS WASHERS
DUST COLLECTORS
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ESTABLISHED 1912
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in the area. Their engineering experience in industrial heating and other related applications provides an excellent background for service on oven problems.

The combined services of Michigan Oven Company and Marin-Mercier Company are available on any industrial oven problem.

WAGNER BROTHERS, INC., Detroit manufacturer and distributor of electroplating equipment and supplies, has purchased from the Atlas Corp. manufacturing and sales rights for Titeflex Filters for the electroplating and metal working fields. The first units built in the new plant of Wagner Brothers Equipment Co., at Wayne, Michigan, were shipped in September, according to John D. Tebben, vice president in charge of sales.

The plant is being tooled to build all standard models and special units of the well known filter which range in capacity from 1 sq. ft. to 500 sq. ft., filtering area.

Wagner Brothers Equipment Co. also manufactures fully automatic and semi-automatic plating machines, hard chrome package plating units, tanks and linings and agitating equipment.

The first glassed stainless steel tank, designed to be super-corrosion resistant for storing fuming nitric acid, will be produced by **THE PFAUDLER CO.**, Rochester, N. Y., for the U. S. Air Force.

The firm, producer of carbon-steel glassed tanks for more than 50 years, is manufacturing the 1,000-gallon tank for Holloman Air Force Base, Alamogordo, N. M. It will be used to store highly volatile nitric acid for oxidizing jet fuel.

The new tank will eliminate a threat to airfield personnel. This existed when the acid was stored in metal drums. The acid decomposed when in direct contact with the metal. High pressures built up in the drums with resultant constant danger of explosion.

Decomposition may dilute the solution to 50 or 60 per cent of its full strength, contaminating the acid and reducing oxidizing efficiency. The new tank will assure use of full strength nitric acid.

How do the airlines of Australia clean engines that come in for reconditioning? How is this same job done in England, France, Switzerland, Norway, and in the United States of America?

What is the procedure in these various countries for cleaning in railroad shops; —diesel engines, truck wheels and underparts, filter cleaning, coach cleaning, paint stripping, air brake testing, generator cleaning?

What about industrial cleaning in the oil industry and in more than one hundred other industries? What about cleaning equipment in all these industries? What developments have there been in each country on washing machines, degreasers, steam cleaners?

W. M. Campbell, President of **MAGNUS CHEMICAL CO., INC.**, of Garwood, New Jersey, has just returned from France, where the Magnus organization held the first International Conference on Industrial Cleaning that has ever been held. Headquarters was the Hotel Bristol, Paris, France.

The information which came out of this conference will be correlated and sent out to Magnus manufacturers and representatives all over the world so that Magnus customers, through service representatives, will get the benefit of anything new on industrial cleaning, which is developed in any of the countries where Magnus is manufactured or sold.

Manufacturing arrangements have been consummated in the following countries: Australia, Canada, Newfoundland, Chile, Brazil, Germany, France,

England, Italy, Mexico, Norway (for Norway Denmark and Sweden), Spain and Portugal, South Africa.

Magnus has sales and service representation as follows: Alaska, Argentina, Bolivia, Columbia, Costa Rica, Cuba, El Salvador, Finland, Guatemala, Hawaii, Honduras, Nicaragua, Panama, Peru, Puerto Rico, Switzerland, Uruguay, Venezuela.

Loring Coes, Jr., assistant director of research and development at **NORTON COMPANY**, Worcester, Massachusetts, has developed in the laboratory a new form of mineral, not found in nature. By simulating the conditions of pressure and temperature by which nature forms the rocks of the earth's crust, Mr. Coes produced a crystallized silica, much harder and a fourth more dense then ordinary quartz. Its hardness is comparable to that of garnet or topaz, with a Knoop hardness value of about 1300 measured with a 100 gram load.

This new rock was formed by subjecting various substances containing silicon and oxygen to a pressure of 35,000 atmospheres at a temperature of 750 deg. C. for 15 hours. These conditions would be duplicated in nature at about 60 miles below tne surface of the earth.

Although this new material resembles mica, one of the common constituents of quartz containing rocks it is considerably harder and does not react to chemical tests as does mica.

Mr. Coes' findings were published in "Science," July 31, 1953. Reprints of the paper are available from Norton Company, Public Relations Department.

METALWELD, INC., Philadelphia, Pa., has adopted a new MW trademark

Fig. 1—Commemorating the thirtieth anniversary of Belke Manufacturing Company, the employees presented a large bronze casting of the company trade mark to William E. Belke, founder and president. Shown are Mr. Belke with five employees who have been with the company through the thirty years. Left to right, Harvie Johnson, Mrs. Gertrude Trimmer, William E. Belke, Roy Johnson, Sigmund Fabry and Leo Lang.

Fig. 2—A view of the employees of Belke Manufacturing Company, taken at the thirtieth anniversary celebration. Seated, front row, left to right, Harvie Johnson, Ralph Belke, William E. Belke, and Larry Verfurth.

to better identify the products and services offered by the three divisions of the company.

The MW Protective Coatings Division and the MW Industrial Welding Division are in the new plant at Scotts Lane and Abbottsford Avenue, and MW's Construction Equipment Division continues in the Hunting Park Avenue plant where the firm has been doing business for the past thirty-five years.

NEW POSITIONS

John E. Rowe

Burke B. Roche, president of Binks Manufacturing Co., has announced the appointment of **JOHN E. ROWE** as vice president in charge of industrial and public relations.

Prior to his new appointment Mr. Rowe was assistant to the president with Government Contracts and Advertising as his special responsibilities. These activities will remain under his supervision.

Mr. Rowe joined the staff of the Binks Manufacturing Co. in October, 1935. Shortly after Pearl Harbor was bombed, Mr. Rowe opened Binks' Washington, D. C. office to expedite the company's role in supplying spray painting equipment for the armed services and war industries. In 1943 Mr. Rowe joined the Navy, and served until V-J Day at which time he was a Lieutenant Commander.

Getting back into civilian life, Mr. Rowe took up his sales activities again for the Company in 1947 and returned to his home town, Chicago, as a member of the home office staff, handling sales and advertising, as assistant to the president.

Election of **STEVE YACUS** to the position of secretary-treasurer of Metal Finish, Inc., 410 Frelinghuysen Ave., Newark 5, N. J., has been announced by Paul E. Kirchartz, president of the firm.

Metal Finish, Inc.,—distributor for Minnesota Mining and Manufacturing Company s "Honite" barrel finishing abrasive chips, compounds and equipment—operates a completely equipped production shop.

A native of Newark, N. J., Mr. Yacus attended Newark Central high school, and is a graduate of General Motors Institute, Flint, Michigan, B.S. (M.E.) 1944. In 1948 he completed post graduate work receiving the degree of Bachelor of Industrial Engineering from the same institution.

W. Alexander McCune, Jr.

W. ALEXANDER McCUNE JR. has been appointed general sales manager of Norton Company of Canada, Ltd. A former abrasive engineer in the northern New Jersey area, Mr. McCune will be succeeded by **WINTON A. VAGEDES,** who has been apointed an abrasive engineer and will assume Mr. McCune's former territory. He is a former department manager and abrasive specialist at the C. W. Marwedel Co. in San Francisco, a Norton distributor. He is presently completing a Norton training course.

Mr. McCune has been with Norton since 1940 except for two years during the War when he served as a Naval officer aboard a destroyer escort. A graduate of Dickinson College, he is a member of the American Society of Tool Engineers, and American Society of Carbide Engineers.

E. F. CONROY, JR. has been appointed vice president in charge of sales by the Davies Supply and Manufacturing Company of St. Louis, according to L. A. Davies, president of the firm.

Prior to World War II, Mr. Conroy was in the tin mill metallurgical department of the Weirton Steel Company, Weirton, West Virginia. From 1941 to 1946, he served with the Air Force, mostly in the European theatre. He joined the Davies sales force in April, 1946.

Mr. Davies also announced that **JOHN KURDENOK** is now Chicago and Detroit representative for Davies Plating Racks and Coatings.

E. F. Conroy, Jr. (left), John Kurdenok

Mr. Kurdenok, who attended Illinois Institute of Technology, has wide experience in the plating field. From 1935 to 1947, he was with the Houdaille Hershey Corporation, the Dodge Chicago plant and the General Mills Co., Minneapolis. He was superintendent and vice president of the Standard Plating Rack Company from 1947 to 1951 and more recently was vice president of the American Plating Rack Company of Chicago.

Dr. R. M. Lacy

Michigan Chrome and Chemical Company, Detroit, Michigan, has announced the appointment of **DR. R. M. LACY** as technical director.

Dr. Lacy is a graduate of the University of Oklahoma, where he earned his Ph. D. in Chemistry and Physics. For the past ten years he has been with the General Electric Company, Bridgeport, Connecticut, as laboratory manager, Major Appliance Division.

Dr. Lacy will be in charge of research and development work on vinyl plastisols and other synthetic coatings for the electroplating, wire goods, textile, automotive, and electrical equipment industries.

The J. J. Siefen Company has announced the election of **JOHN F. SIEFEN** to the presidency of the Company. Other officers are: **I. E. SIEFEN**, vice-president and treasurer, and **JOHN R. SIEFEN**, secretary.

Rodney E. Sagendorf

The Detrex Corporation of Detroit, manufacturer of industrial metal cleaning equipment and chemicals, has announced the appointment of **RODNEY E. SAGENDORF** as administrative assistant to W. F. Newbery, director of sales.

For two years, Mr. Sagendorf has been chief of the Chlorinated Solvents section, Chemical Division, of the National Production Authority in Washington, D. C. He joined Detrex as Manhattan representative in 1942. Loaned to the government for four years during the war, attached to the office of the Chief of Ordnance in Washington and Detroit, Mr. Sagendorf returned to Detrex in 1945 to become expediter for the company's purchasing department, later was placed in charge of the general sales office, then became the company's Ohio representative for two years before joining the NPA.

Robert O. Baughman

Another rubber technician has been added to the Automotive Rubber Company's Detroit organization. He is **ROBERT O. BAUGHMAN**, formerly of Heaveatex Corporation, latex compounder and broker.

Mr. Baughman will be in charge of ARco's newly enlarged rubber product development department. In addition to his functions as the ARco chemical laboratory head, Mr. Baughman will assume top responsibilities for latex product development and sales.

Harry Hariton

HARRY HARITON, of Forest Hills, N. Y. has been appointed sales representative of Wagner Brothers, Inc., Detroit, warehouse supplier to the Electroplating Industry, for the New York Metropolitan area, by John T. Tebben, vice president in charge of sales.

He will cover New York City, Long Island and Northeastern New Jersey, with an established line of automatic, semi-automatic and hard chrome unit platers, rectifiers, agitators, anodes, containers, tanks, tank linings, solutions and supplies.

Mr. Hariton, a chemical engineer, was formerly sales manager of Empire Plating Company.

Three new directors have been elected to the board of directors of the American Platinum Works, Charles Engelhard, president, has announced. The company is a member of the Engelhard Industries group.

Those named are: **WILLIAM J. WAGNITZ**, general sales manager; **JOHN F. THOMPSON, JR.**, sales manager for the silver brazing alloy division; and **OTTO W. LANGHANS**, works manager.

Reno Offringa

Ransburg Electro-Coating Corp., Indianapolis, Indiana, has appointed **RENO OFFRINGA** as sales engineer for the Michigan and Northern Indiana area. For the past six years Mr. Offringa has been associated with the surface coating industry in technical development and sales. His temporary headquarters will be at his home in Spring Lake, Michigan.

DR. NEWMAN W. THIBEAULT has been named assistant director of research and development in charge of the Physical Research and Microscopic Sections by Norton Company of Worcester, Mass.

Dr. Thibeault succeeds the late A. Albert Klein who died suddenly at his home August 25. Dr. Thiebeault has been closely associated with Mr. Klein since 1936 when he first came to Norton as a petrographer.

Dr. Thibeault received his bachelors degree at Dartmouth in 1934, his masters degree from Virginia Polytechnic Institute, and his Ph. D from the University of Michigan in 1943. He is a member of Phi Beta Kappa and Sigma Xi honorary fraternities. He is a member of the American Crystallographic Association and a Fellow of the Mineralogical Society of America and the Geological Society of America.

The J. C. Miller Company of Grand Rapids, Michigan has announced the appointment of **ROGER I. SLATER** as sales representative in the Southern Ohio area. Mr. Slater, who has had wide experience in all phases of the finishing industry, has established his headquarters in Cincinnati, Ohio.

Roger I. Slater

WILLIAM J. HENNESSY, sales supervisor, has been given responsibility for sales to the steel industry of all products of the Metal Processing Department of the Pennsylvania Salt Manufacturing Co., J. J. Duffy, sales manager of the Department, has announced.

JOHN M. DAVIDSON, formerly Philadelphia District sales manager for Industrial Chemicals, has been assigned to the Metal Processing Department as sales supervisor for all other sales of the department except phosphate coatings and lubricants.

Under Mr. Hennessy's supervision will be sales of all alkaline cleaners, emulsion cleaners and phosphate coating and

lubricating products now sold to the steel industry. Formerly district sales manager for these products in Pittsburgh he is widely known in the metal finishing field and has developed broad experience in the requirements and uses of chemical specialties by the steel industry in particular.

Mr. Davidson will supervise sales of metal cleaners and other specialties to the non-ferrous industries and all metal fabricators. He also gained considerable experience in this field as a technical sales service representative in the Pittsburgh area before coming to the Philadelphia district sales offices.

J. D. Kershaw

Hanson-Van Winkle - Munning Co., Matawan, N. J., has announced the appointment of **J. D. KERSHAW** as district sales manager for Ohio. His headquarters will be in Cleveland, 308 Engineers Bldg.

Mr. Kershaw served as Western Michigan sales representative in Grand Rapids for eight years. Before joining H-VW-M in 1945, he spent four years with Studebaker Corp., South Bend, Ind., where he was supervisor of plating in the aviation division.

He is a member of the American Electroplaters' Society, and a graduate of Illinois Institute of Technology, B.S., in Chemistry.

Promotion of **HENRY S. CURTIS** to the post of the manager of production and engineering of the Diamond Alkali Organic Chemicals Division, Inc., has been announced by A. L. Geisinger, vice president. Mr. Curtis will make his headquarters at the Organic Chemicals Division plant in Houston, Texas.

Mr. Curtis joined the Diamond organization in January, 1951, when he was named assistant general superintendent at the government-owned magnesium plant operated in Painesville, Ohio, by Diamond Magnesium Company, a subsidiary of Diamond Alkali. In August the following year he was appointed chief engineer of the newly-formed Organic Chemicals Division.

W. L. Pinner

The appointment of **W. L. PINNER** as manager of the Process Development Division of Houdaille - Hershey Corporation has been made known by Frank G. Fisher, vice president and general manager.

Mr. Pinner will head up a unit of the corporation which coordinates technical control of its manufacturing operations with process development in metallurgical, electrochemical, painting and other fabrication activities.

An employee of Houdaille - Hershey since 1923, Mr. Pinner is a chemical engineering graduate of the University of Michigan. He is widely known in the metal finishing field, having served as president of the American Electroplaters' Society and enjoying the distinction of having been the first American to be elected to honorary membership in the Institute of Metal Finishing of England.

Also announced was the appointment of **WILLIAM J. PIERCE** as supervisor of process development, in direct charge of research and development activities in this division. Mr. Pierce, who holds a chemical engineering degree, has served the company since 1937 and has also specialized in processes involving metal fabrication and finishing.

DONALD R. GUTHRIE has been named assistant general manufacturing manager of the coated abrasives and related products division of Minnesota Mining & Manufacturing Co. Mr. Guthrie formerly was executive engineer in charge of engineering research.

E. O. Robson, president of Midland Industrial Finishes Company, Waukegan, Illinois, has announced the promotion of **R. A. LEMERSAL** to the position of assistant sales manager.

Mr. Lemersal, during the past ten years, has compiled an outstanding record in sales, and his elevation to the position of assistant sales manager is in line with the continued growth and development of the company.

Wm. G. Gerstacker

Heil Process Equipment Corp., Cleveland, Ohio, manufacturer of chemical proof tanks, tank linings, heat exchanger equipment, lead anodes, steam jet agitators and plastic exhaust hoods and duct work, has appointed **WM. G. GERSTACKER** as chief engineer. Mr. Gerstacker received his mechanical engineering degree from Case Institute of Technology and has had eighteen years experience as estimator, product manager and chief engineer with other process equipment manufacturers principally in the chemical plant equipment field.

Other recent additions to the Heil Staff include the appointment of **JOHN M. CARPENTER** as estimator in the lining and coating department, and **FRANK BABIK** as estimator in the fabrication department. Mr. Carpenter received his bachelor of science degree in chemistry from the University of Arizona and has several years experience in industry. Mr. Babik has had approximately twenty years experience in fabrication and layout work for all types of steel and alloy fabrications.

The J. C. Miller Company of Grand Rapids, Michigan, has announced the appointment of **STANLEY BEAUREGARD** and **LOUIS E. CARR** as sales representatives. Mr. Beauregard will represent Miller finishing supplies and equipment in Eastern Michigan with offices at 3829 East Seven Mile Road, Detroit.

Prior to his affiliation with the J. C. Miller Company, Mr. Beauregard was associated with the U. S. Rubber Company and was later active as an official of the Willow Run Rubber Company.

Mr. Carr will represent the company in the state of Wisconsin and will make his headquarters in Milwaukee. Mr. Carr is a graduate of Purdue University holding B. S. and M. E. Degrees. Prior to representing the Miller Line of finishing equipment and supplies he was associated with the A. O. Smith Corporation and Rutenberg Electric Company.

RICHARD L. MULLANEY, JR., has been appointed a senior chemist by the Apothecaries Hall Co., of Waterbury, Conn. He will assist in the development of metal finishing specialties and will also be available for technical service work related to metal finishing problems. Mr. Mullaney is an honor graduate in chemistry from St. Anselm's College. Before joining Apothecaries Hall he had been a plating chemist with Pratt & Whitney Aircraft and a plating supervisor and chemist at the Trumbull Electric Co.

ALGIRD J. BRAZANSKAS has been named an assistant chemist by Apothecaries Hall. He will work on research and development problems in metal finishing. Mr. Brazanskas is a graduate of the University of Connecticut where he majored in chemistry. He is a member of the American Chemical Society.

After two years' service as a Lieutenant Commander in the Navy, **JAMES H. COGSHALL** has rejoined the Pennsylvania Salt Manufacturing Company as a sales engineer in the Corrosion Engineering Products Department in Philadelphia.

Before Mr. Cogshall was called to the Navy in 1951, he served as a corrosion engineer at Pennsalt's Wyandotte, Mich., plant, where he supervised a study of the use of protective coatings.

ROBERT L. SCHWAEGERLE, Norton Company Abrasive Engineer in the eastern Iowa territory, retired July 1. He was succeeded by **ROBERT H. JOHNSON.**

Mr. Schwaegerle had been with Norton 25 years, serving as an abrasive grain demonstrator attached to the Chicago office from 1927 to 1944 when he was appointed an abrasive engineer in his present territory.

Mr. Johnson has been with Norton since 1941 when he became an apprentice and later an instructor in the grinding machine division. Following service in World War II, he returned to the Company's abrasive division as a technician in the research laboratories until he was

changed to manufacturing control work in 1950. He recently completed the sales training course.

James H. Hamilton

Mortimer Sullivan, president of Sullivan Varnish Company, Chicago manufacturer of industrial coatings, has announced the appointment of **JAMES H. HAMILTON** as sales manager.

Mr. Hamilton, who has been identified with the metal finishing and industrial coating fields for 25 years, will direct the sales activity of both the parent company and its new affiliate, the Sullivan Chemicals Division.

Leo V. Steck, marketing vice president of Shell Chemical Corporation, has announced a series of changes in his staff.

J. J. LAWLER, formerly district manager in Chicago, takes up new duties as sales manager for the company's Julius Hyman & Company Division in Denver, Colorado, after a brief period on the marketing staff in New York. Mr. Lawler started his Shell career at St. Louis in 1937 after receiving degrees in chemical engineering and organic chemistry from Missouri University, St. Louis.

J. K. ROBBINS, formerly district manager at St. Louis, replaces Mr. Lawler as Chicago district manager. He returns to Chicago after many years' experience selling chemicals in the Midwest.

W. C. LOWREY, formerly manager of the Eastern Division solvents department in New York, becomes district manager at St. Louis. He is a graduate in chemical engineering from the University of Alabama.

A. P. HOWE, senior technical salesman at Chicago, goes to San Francisco as Western Division chemical products manager.

WILLIAM Q. MOONEY has become manager of marketing's new employee development department. Mr. Mooney formerly was manager of the marketing service department in the Eastern Division. He began work with Shell in 1929 as a clerk at Long Island City, New York, and has also served at Brooklyn, New York; Hartford, Connecticut; Boston, other New England and eastern centers.

Mr. Steck also announced that, effective October 1, **W. E. KEEGAN,** who has spent the last year as his assistant on staff work, returns to sales management activities as assistant to the sales manager of Shell Chemical's Eastern Division. Mr. Keegan came to New York from Detroit where he was district manager. Previously he had been salesman in the Philadelphia and New York areas.

Thomas Richards

Allied Research Sales Corporation, a subsidiary of Allied Research Products, Inc., manufacturer of Iridite protective finishes and ARP plating chemicals, has announced the appointment of **THOMAS RICHARDS** as its representative in Cincinnati, Ohio.

Mr. Richards' headquarters will be at 426 Transportation Building, Cincinnati. From that location he will serve manufacturers in the Southern Ohio-Indiana-Northern Kentucky area.

L. C. Sorensen, president of Kelite Products, Inc., manufacturer of industrial cleaning and processing chemicals, has announced the appointment of **RICHARD C. MARTIN** as national sales director. Mr. Martin will supervise the company's service offices in 84 cities.

Mr. Martin started with Kelite in 1944 and in 1950 was put in charge of the Southern Division with headquarters in Dallas. A native Texan himself, Mr. Martin expanded business so rapidly throughout Missouri, Kansas, Oklahoma, Louisiana and Texas that he is now in charge of the entire sales operation. He will make his headquarters at the Kelite main plant, 1250 North Main Street, Los Angeles.

Roy Rumbaugh

T. Curtis McKenzie, president of Klem Chemicals, Inc., Dearborn, Michigan, has announced the appointment of **ROY RUMBAUGH** as director of sales engineering. Mr. Rumbaugh's new position will place him in the field where he will work with Klem service engineers in an advisory capacity.

For the past eight years Mr. Rumbaugh has represented Klem Chemicals, Inc., as a manufacturer's agent. Prior to his association with Klem, he was with the Ford Motor Company for 17 years. With more than 25 years' experience in his field, Mr. Rumbaugh is well known throughout the industry.

THEODORE C. SMOLINSKI, has been appointed director of technical service for Wagner Brothers, Inc., Detroit electroplating warehouse supplier and manufacturer. Since his graduation from Michigan State College in 1942 with a B.S. degree in chemistry, he has worked on plating and chemical problems for Oldsmobile, Packard and Ainsworth Manufacturing. He joined Wagner Brothers in June of this year.

WHITFIELD J. BELL, Norton Company abrasive engineer in Maryland and Delaware, has retired after 38 years with the company. **DAVID H. PAUL** will take over the territory.

Mr. Bell first came to Norton in 1915 as a member of the order department at the Worcester, Mass., plant. Later he went into outside sales, first in New York, and since 1926, out of Philadelphia.

Mr. Paul has been a field engineer in the district served by the Philadelphia warehouse since January of this year when he returned from active duty with the Navy. Prior to being recalled in 1951, he was an abrasive engineer in the Memphis area. He is a graduate of the U. S. Naval Academy at Annapolis and served as a submarine officer in both World War II and the Korean Campaign.

HONORS

NORTON COMPANY, Worcester, Mass., recently honored 907 long time employees at traditional ceremonies which date back to 1921.

Thirty-three (33) were awarded gold medals signifying 35 years service with the company; fifty-three (53) received gold watches for 25 years; four hundred and seventeen (417) with company service between 26 and 34 years also were given gold watches; one hundred twenty-eight (128) silver pins for 15 years; and two hundred seventy-six (276) bronze pins for 10 years.

Milton P. Higgins, Norton's president, was one of the new members of the 25-year group.

Since 1921, when long-service awards were first presented, 1459 employees have reached and passed the quarter century mark.

The company now has 738 men and women actively employed who have worked in its Worcester abrasive and machine divisions more than 25 years and an additional 369 on the retired list. Of the remaining, 322 are deceased and 30 have left the company.

At the present time 3607 Norton employees have been with the company longer than 10 years. This figure represents 64 per cent of current employment in the Worcester plant, and the percentage continues to grow every year.

TRAINING COURSES

Paint finishing foremen on the West Coast have a new conception of spray techniques as a result of six schools conducted this summer by George I. Stoddard, **DeVILBISS COMPANY** spray painting instructor, at the company's Santa Clara plant and the University of Santa Clara.

Mr. Stoddard said the two bugaboos which have been giving the most trouble to spray operators are improper spraying pressures and incorrect gun handling techniques.

These spray painting classes, Mr. Stoddard said, will have a far reaching effect since those attending the school will in turn train other operators either within their organization or under their jurisdiction.

DeVilbiss inaugurated the West Coast schools last summer and it is expected that the classes will continue to be held there annually. The schools, each of one week's duration, were divided to accommodate personnel from automotive jobbers, industry, maintenance and contract painters, and government establishments.

The companies represented in the industrial classes, Mr. Stoddard said, could very well be a Who's Who of West Coast Industries.

Several students reported they were taking the courses to guide them in setting up spray painting training programs at their companies. While in the midst of his teaching schedule, Mr. Stoddard learned that a student from last year's class who is employed by an automobile manufacturer was given an advancement which he attributed to techniques learned in the school.

Instruction at the DeVilbiss school in Toledo continues on a year-round basis and is offered without charge. Students arrange their own transportation, room and board.

Increased use of spray painting is creating greater requirements for trained personnel. To help meet this need, the **BINKS MANUFACTURING COMPANY** of Chicago will conduct a new series of **SPRAY PAINTING SCHOOLS** in Chicago starting early in January.

The announced dates for three one-week sessions are as follows:-

January 4 through January 8, 1954
February 1 through February 5, 1954
March 1 through March 5, 1954

Classes will be held at the Binks plant in Chicago from Monday through Friday in specially prepared quarters completely equipped for instruction purposes.

The Binks Spray Painting School is set up particularly for training officials, foremen, supervisors, distributors, jobbers' representatives and others, including men who service spray painting equipment. All class members have a common interest in spray painting and similar problems that involve spray finishing and coating.

Even those men who have never actually used a spray gun learn correct spray painting methods. Trouble-shooting gets major attention. Considerable time is given to automatic equipment. Practical applications of spray booths are also covered.

William Beacham, nationally recognized spray painting authority, will again conduct the classes. Mr. Beacham, director of Binks Customer Research Laboratory, has a broad background of experience in practical spray work. His counsel and advice on specific problems of coating and finishing will be readily available to the students.

Recently, Binks' classroom facilities were doubled and more visual training aids provided. One of the recent, and most popular additions, is a sound-slide film that explains in detail the operation of spray guns and related equipment.

Under the direction of Mr. Beacham, every class member takes spray guns apart, re-assembles and tests them. Then students actually produce such finishing defects as blooming, blushing, orange peel, shore line, and so on and learn how to prevent and remedy these errors. During the 5-day course, paint circulating systems, material handling pumps, spray booths, oil and water extractors and catalyst painting equipment are explained and demonstrated.

No tuition is charged at the Binks School. Classes, however, are limited to 40. Each student pays his transportation and expenses while in Chicago. Enrollment applications should be made two to four weeks in advance of class dates. For further information or reservations address E. F. Watts, Binks Manufacturing Co., 3114-44 West Carroll Ave., Chicago, Illinois.

MEETINGS

The speakers, and their topics, to be presented at the **ANNUAL MEETING** of the **PHILADELPHIA BRANCH, A.E.S.**, Saturday, November 21 at the Broadwood Hotel, Broad & Wood Sts., Philadelphia, Pennsylvania, are as follows:

"Application, Use and Maintenance of Motor-Generator Sets and Rectifiers for Electrolytic Processes"—E. G. Schroeder, Electric Products Co., Cleveland, Ohio.

"Defects in Plating Solutions and Their Remedies"—Milton Nadel, Berkeley Industries, Jersey City, New Jersey.

"Cathode Forms and Their Effect on Metal Distribution"—Dr. R. A. Schaefer, Cleveland Graphite Bronze Co., Cleveland, Ohio.

Honorary Chairman of the **DETROIT BRANCH, A.E.S., ANNUAL EDUCATIONAL SESSION** to be held December 4, in the Statler Hotel, will be Dr. William Blum. Dr. Blum, who attended the First Australian Federal Convention, will present an illustrated talk on his three-month trip.

Other speakers and their subjects are as follows:

"Recent Development in the A.E.S. Research Program"—Dr. Earl J. Serfass, Lehigh University.

"Progress in Development of a New Accelerated Corrosion Test" (A.E.S. Research Project No. 15)—Walter L. Pinner, Houdaille-Hershey Corporation.

"A Metallographic Study of Some Steels for Nickel Plating" (A.E.S. Research Project No. 14)—Dr. A. E. R. Westman, Ontario Research Foundation.

A large turnout is expected for this meeting which will begin at 8:00 P.M.

George Schore

Preparations for the **41ST ANNUAL CONVENTION** of the **AMERICAN ELECTROPLATERS' SOCIETY**, to be held in New York City July 12 to 15, 1954, are going along at a good clip under the capable direction of George Schore, general chairman of the Convention Committee. Mr. Schore has announced that an innovation at the 1954 Convention will be a Visitors' Entertainment Committee directed by Mariano Ranno, partner, Imperial Plating Company. Mr. Ranno's committee will assist convention visitors in securing tickets to shows, ball games, and other entertainment functions in New York.

The New York Branch, host for the Convention, is the oldest Branch in the American Electroplaters' Society, and the Branch from which the Society grew, as it were. As a result of the efforts of the late Charles H. Proctor during the early months of 1909, a meeting was held on April 10, 1909 attended by 40 charter members, at which the National Electro-platers Association was organized, and at the same time, the New York Branch was granted a charter. Officers of the Association, elected at the time of its formation, were: Charles H. Proctor, president; Ben Gilchrist, secretary; Nathan Emery, treasurer; George B. Hogaboom, librarian and chairman of printing.

Charters were granted shortly, to Branches in Philadelphia, Chicago, Toronto, Detroit, Rochester, St. Louis, and Indianapolis. During the term of Dick Sliter (second president of NEPA), a committee composed of Charles H. Proctor, George B. Hogaboom, and John Sterling was appointed to organize a Supreme Body to consist of representatives from all the member Branches in the various cities. At the NEPA Fourth Annual Banquet, February 20, 1913, in New York, representatives of the New York, Philadelphia, Chicago, Rochester, Toronto, Detroit, St. Louis, and Indianapolis branches met and created the American Electroplaters' Society. The following officers of the National Society were elected: George B. Hogaboom, president; J. H. Hansjosten, vice president; Fred Clements, secretary; John J. Schulz, treasurer; Gus Hoffman, editor. The first Annual Convention of the American Electroplaters' Society was held in Chicago in 1914.

(Note: The historical data presented herewith is based on a talk by John E. Sterling at the New York Branch banquet in 1951. Mr. Sterling is a founder member and a past president of the A. E. S., and the only living New York Branch honorary member.)

Although the **1955 CONVENTION AND INDUSTRIAL FINISHING EXPOSITION** of the **AMERICAN ELECTROPLATERS' SOCIETY** is nearly two years away, plans already have been launched to make this the biggest and best meeting in the Society's 40-year history.

The Executive Board of the AES, taking the first step, has announced the completion of a contract with the American Decorating Company, 1849 West 24th Street, Cleveland, O., to produce this exposition, which will be held in Cleveland's mammonth Public Auditorium, June 20 through 23, 1955.

American Decorating, a nation-wide organization with 20 years' experience in trade show organization and convention management, has produced and supervised many of the nation's largest industrial exhibitions.

Harold E. Bartlett, of American Decorating, has been appointed Exposition Manager by the AES Executive Board. Responsible for space sales and promotion, he will work directly with the Society's Cleveland Industrial Finishing

Exposition Committee.

AES members comprising this committee are: Leon R. Westbrook, Consultant; Howard H. Blouch, Chromium Corporation of America; Eugene L. Combs, Diamond Alkali Company; Herb E. Head, Briggs Manufacturing Company; Ralph A. Schaefer, Clevite-Brush Development Company; and P. Peter Kovatis, Executive Secretary of the AES.

NECROLOGY

CHARLES WAGGAMAN BERL, 57, market survey manager of the sales research division of Hercules Powder Company, died Oct. 7 in the Beebe Hospital, Lewes, Delaware.

A native of New Orleans, Louisiana, Mr. Berl lived in Wilmington most of his life. He graduated from St. Patrick's Parochial School and Friends School, then entered Princeton University, where he majored in literature and graduated with a degree of bachelor of letters.

Mr. Berl joined Hercules in 1937 as a member of the sales staff of the Virginia Cellulose Department. In 1942 he was named market survey manager of the Hercules Advertising Department.

Mr. Berl was a member of the Chemical Market Research Association, the Advisory Council Market Research Directors, the National Industrial Conference Board, the Netherlands Society of Philadelphia, the Princeton and Friends School Alumni Associations, the Concord, Wilmington, and the Hercules Country Clubs.

meetings OF INTEREST TO FINISHERS

Nov. 16-17. Fall Meeting, Galvanizers Committee, American Zinc Institute, Inc., Netherland Plaza Hotel, Cincinnati, O.

November 21. Philadelphia Branch, A.E.S., Annual Meeting, Broadwood Hotel, Philadelphia, Pa.

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Nov. 30-Dec. 5. 24th Biennial Chemical Industries Show, Commercial Museum and Convention Hall, Philadelphia, Pa.

December 4. Detroit Branch, A.E.S., Annual Educational Session and Christmas Party, 8:00 P.M., Statler Hotel, Detroit, Michigan.

Jul. 12-15, 1954. 41st Annual Convention, American Electroplaters' Society, New York City.

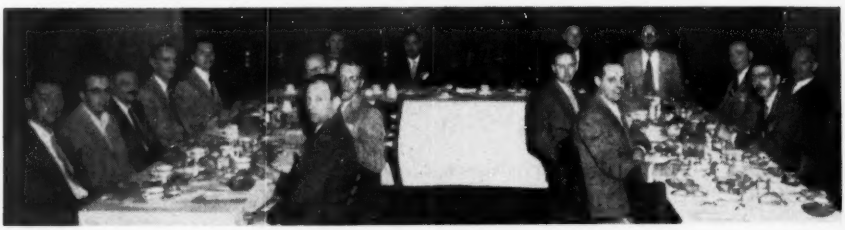
SOCIETIES

THE FELT ASSOCIATION has announced the filing of standard samples by manufacturing members. This exposition will be open to the public at all times at the Association's offices, 74 Trinity Place, New York 6. These samples cover the specifications of The Felt Association, the U. S. Dept. of Commerce CS 185-53, the Society of Automotive Engineers, the American Society of Testing Materials, the American Society of Mechanical Engineers and the military specifications of the Army, Navy and Air Force.

Fig. 1 (below)—At the **St. Louis Branch, A.E.S.**, Jack Winters, R. O. Hull Company, spoke on "Interpretation of Hull Cell Tests." Shown in the photo are, left to right, G. K. Robins, librarian; Mr. Winters; Dale Bolyard, president; E. R. Hunleth, secretary-treasurer; W. B. Ellis, first vice president.

Figures 2 and 3 (left and below) show some of the St. Louis Branch members who attended the dinner preceding the meeting.

On October 17 the **National Federation of Metal Finishers** held a Board of Directors meeting and general meeting at the Hotel Sinton, Cincinnati. A number of the directors, as well as several guests, attended a luncheon held prior to the general meeting.



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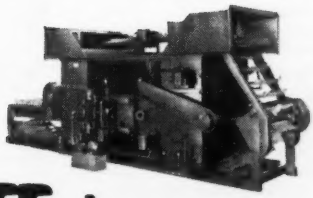

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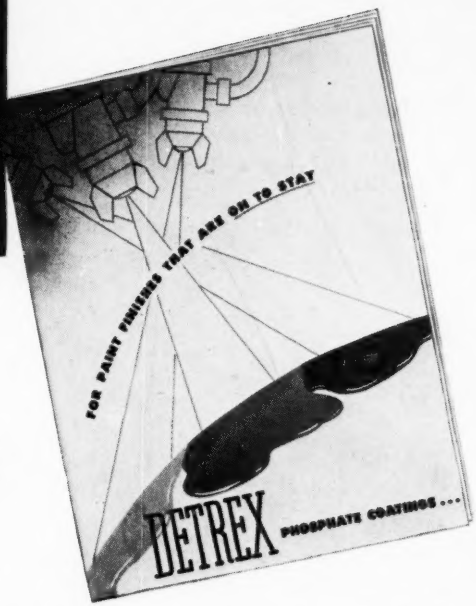
DETREX

PHOSPHATE COATINGS



IF YOU PAINT YOUR PRODUCT...

you need this free booklet!

. . . because it tells how Detrex can help you obtain greater sales appeal for your painted metal products through better paint finish and longer paint life.

This new booklet describes PaintBond, a zinc phosphate coating for metal surfaces prior to painting. This fine-grained crystalline coating is applied by spray or immersion means, to provide millions of microscopic crevices into which the paint flows. Your paint is *locked on to stay* for a beautiful, durable finish.

Insoluble in water, PaintBond seals off the metal from moisture and other causes of corrosion. Even if the paint finish is marred or scratched, rust is confined to the exposed area. The surrounding paint remains locked securely to the metal.

PaintBond is economical to use and meets government specifications for phosphate coated surfaces.

Applications and equipment recommendations are fully described in this new booklet which also tells about the laboratory, manufacturing, engineering, and field service facilities of Detrex—a company long experienced in serving industry with both the equipment and the chemicals for all cleaning and phosphate coating requirements.

For your free copy, write today to

Detrex Corporation, Box 501, Detroit 32, Michigan.

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DETREX CORPORATION

DEGREASERS • DEGREASING SOLVENTS • WASHERS
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